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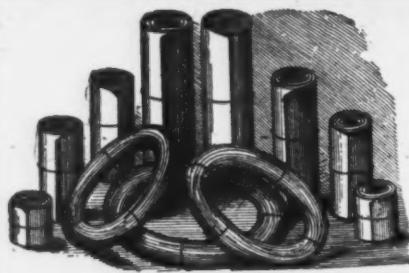
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# THE IRON AGE.

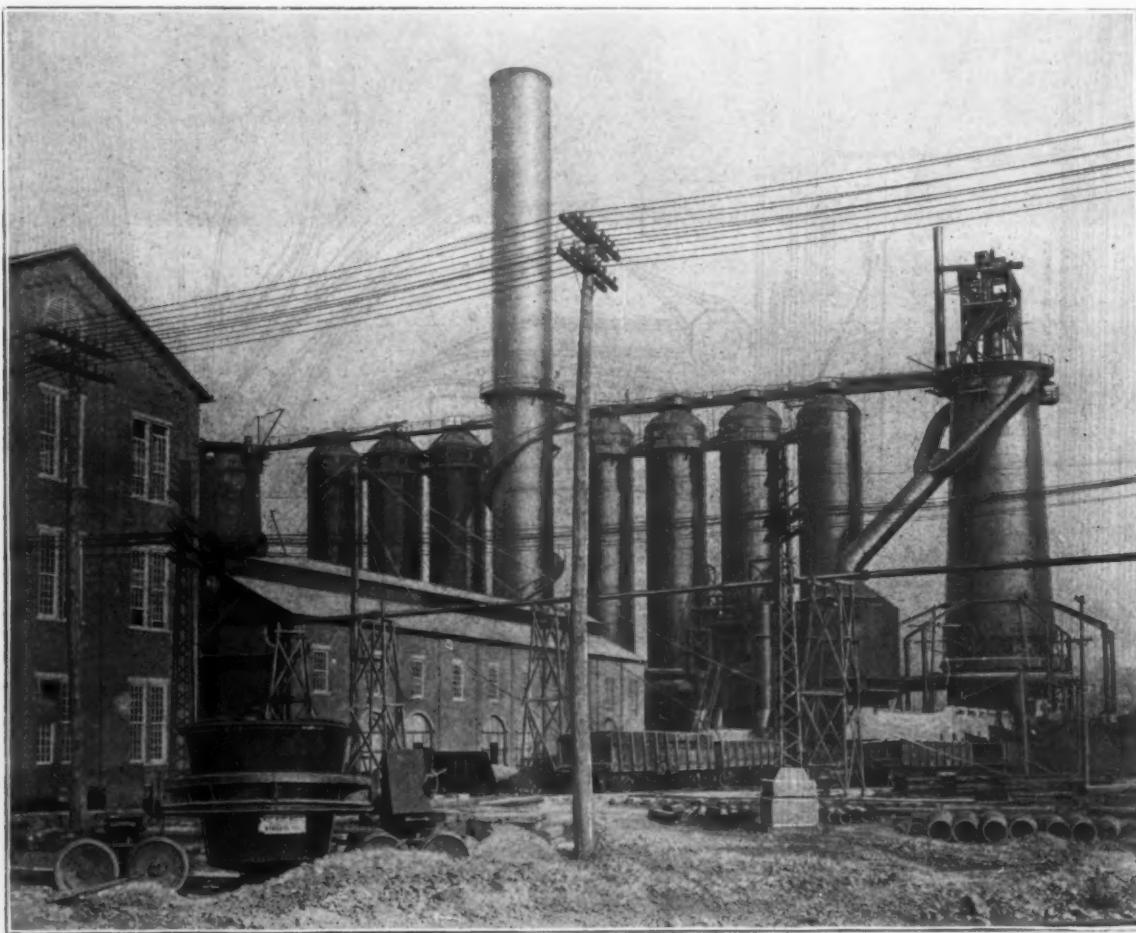
THURSDAY, DECEMBER 21, 1899.

## The Youngstown Blast Furnaces of the National Steel Company.

After a successful career as a producer of steel billets and bars, the Ohio Steel Company of Youngstown, Ohio, under the leadership of Henry Wick, the president, decided to round out the plant by the erection of two modern blast furnaces, so as to share the advantages of using direct metal. In the month of November, 1898, the work of construction was begun, and was being vigorously carried on when this year the Ohio Steel Company became one of the constituent companies of the National Steel Company. The plant, which was designed by

### The Handling of Stock.

The characteristic and most interesting feature of the plant is the handling of the stock from the car in which the material is received to the charging bell. The Youngstown plant marks a further step in the development of what may be called machine fed furnaces, of which the Duquesne furnaces were the most conspicuous early example. Aside from the effort to further minimize the cost of labor, the cardinal principle influencing the design of the Ohio plant has been a highly



One Stack and Stores of Furnace Plant.

### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

Thomas McDonald, general superintendent, and M. A. Neeland, chief engineer, is being erected under the supervision of Guy R. Johnson. That part of it which was originally planned is now approaching completion, but work has only lately begun on a third furnace as an addition to the plant.

The general arrangement and the relation, so far as location is concerned, to the steel works is shown in the accompanying general plan. The shipping facilities are ample, the Erie and Pittsburgh & Western railroads passing by the mill. The large, level tract is underlaid with a hard shale, nearly horizontally bedded, and the Mahoning River assures an ample water supply.

important one. The combined bin and storage system as thus far developed in this country, in contradistinction to the plain bin system in Europe, depends for efficiency and profit upon the use of drop bottom cars, which, it may be stated incidentally, require rather more labor for discharging than is usually assumed. It takes a gang of several men to remove those parts of the load of ore which are caught in corners, &c.

But when, notably in times of car shortage, ore is loaded at the receiving ports into different types of cars, many without drop bottoms, then the bin system loses much of its efficiency. The principal consideration which led to the development of the system adopted at the

new Ohio steel plant was that dictated by the desire to attain maximum efficiency in spite of wide differences in the type of cars supplied by the roads delivering the ore. It was this which led to the adoption, in a modified form, of the car unloader used in the coal shipping trade,

useful as a preliminary to the more detailed description of plant and equipment. The ore trains are gathered on a series of four storage tracks 650 feet long, from which each individual car is allowed to run by gravity to a track which leads to the car dumping machine. In its

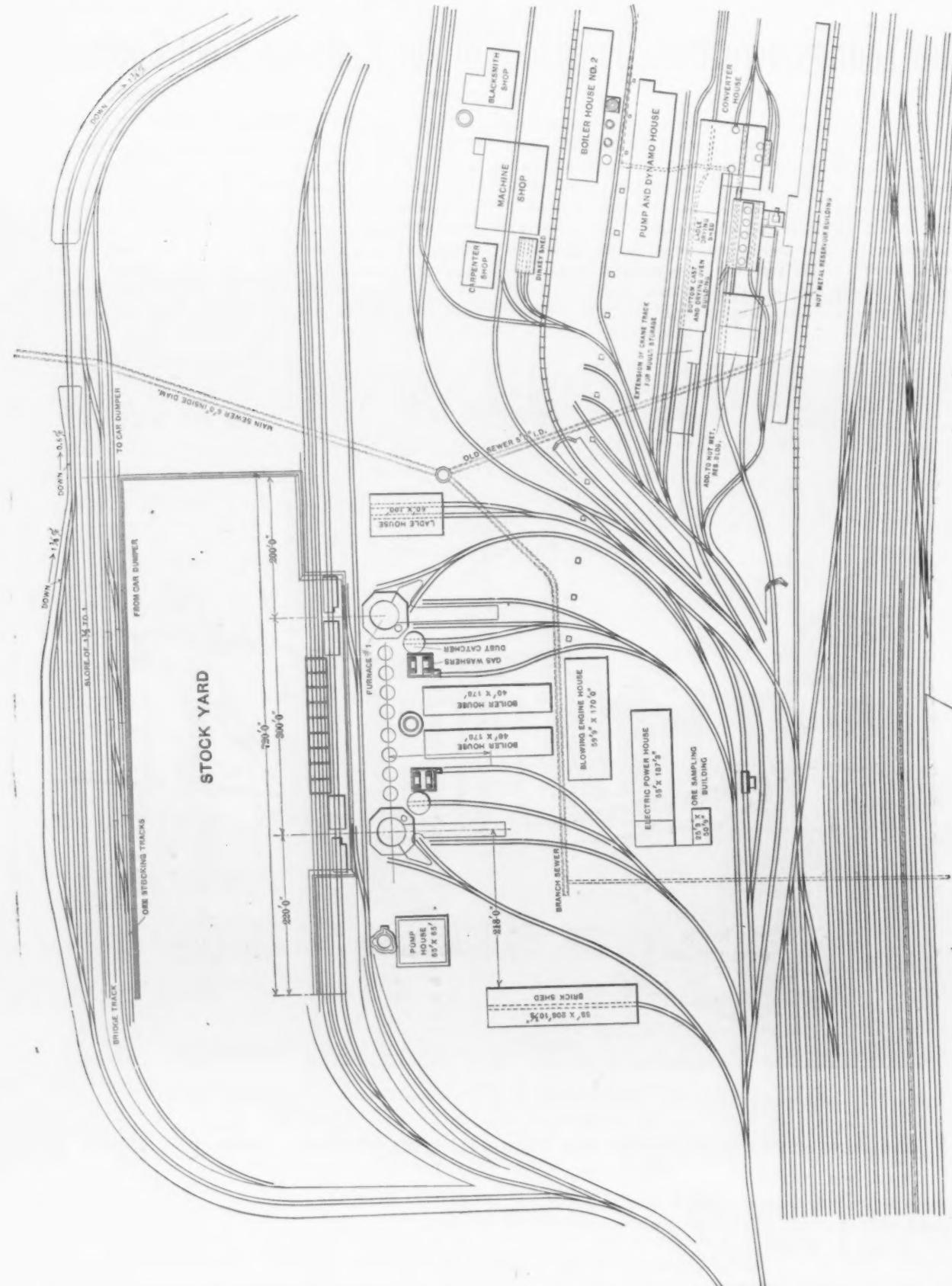


Fig. 2.—General Plan of the New Furnace Plant of the National Steel Company at Youngstown, Ohio.

which is based upon the plan of tilting over the full car, discharging its contents over its side.

It is hardly necessary to refer to the fact that all furnaces dependent upon the Lake Superior mines for their supply must accumulate a certain stock of ore, for use during the winter months, and that therefore a considerable storage capacity is necessary.

A general review of the system adopted may be

course it runs over a depressed dilly car driven by wire rope, which carries it up to the platform of the dumping machine. After being gripped, the platform, with its load, is shifted sideways and then is turned over, deflectors distributing the load as it slides over the side of the car into a group of four bridge cars, which are mounted on two transfer cars.

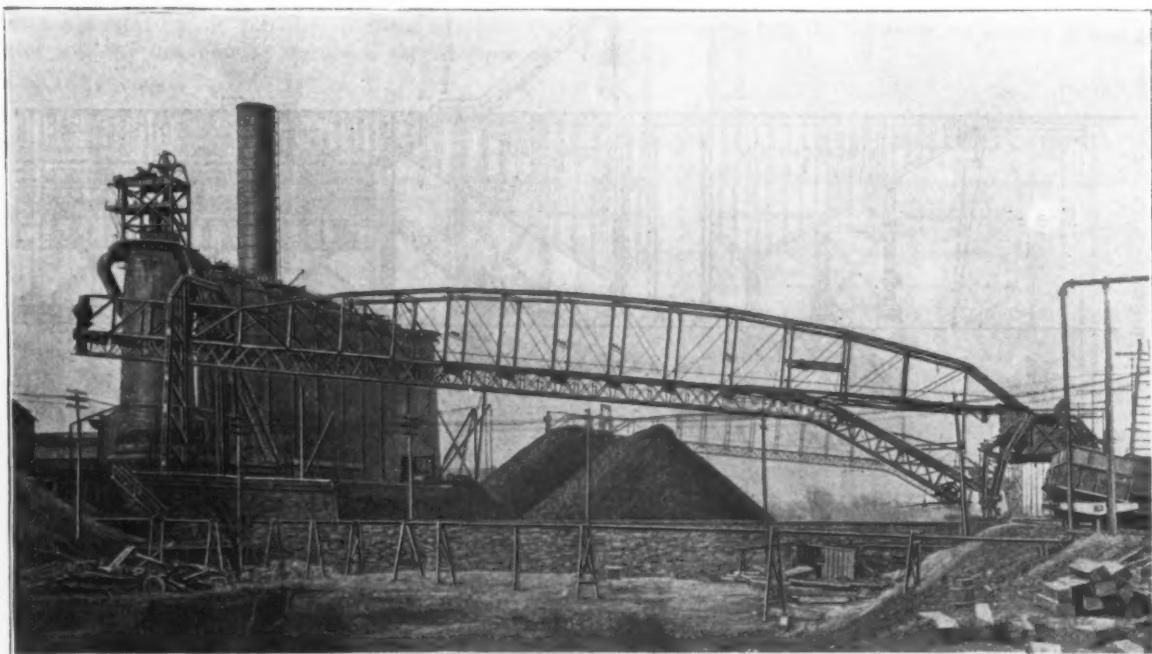
Thence the ore is conveyed to the bridge which spans

the stock yard and commands the series of bins located on the opposite side of the stock yard. One by one the four bridge cars are run off the transfer cars. The ore contents of each may either be automatically dumped upon the stock yard or direct into the proper furnace bin.

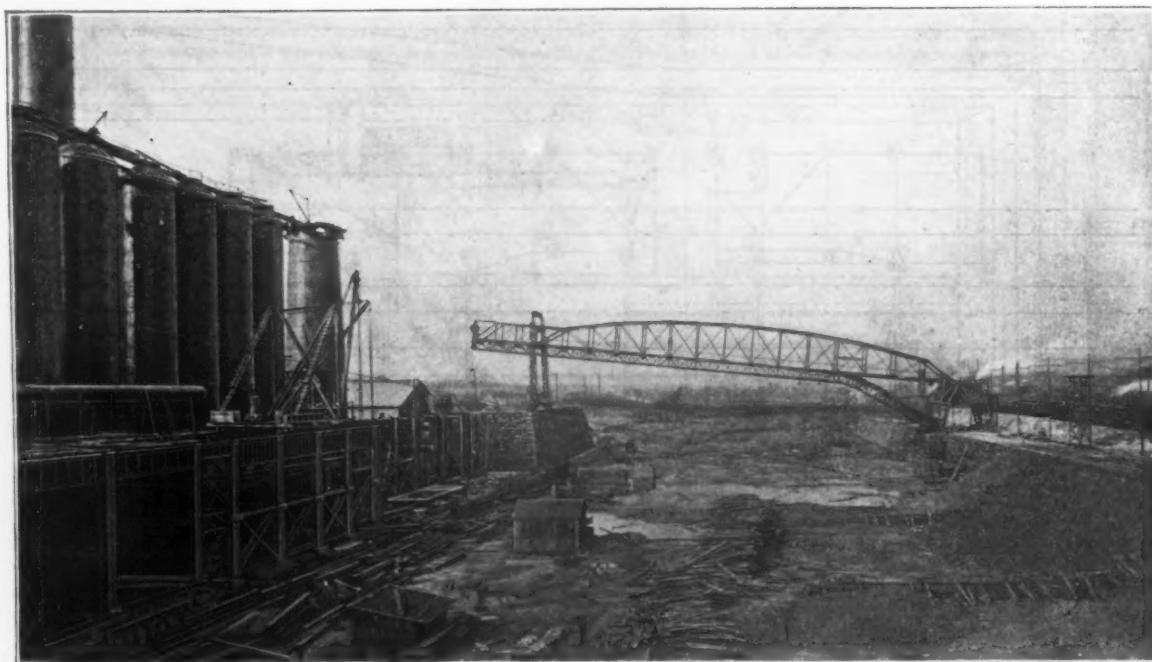
The transfer cars and bridge cars are then ready to return to car dumper for a new load of ore.

communicating between the bridge and the bins, and travelling over the top of the latter. From the bins the materials constituting the burden are drawn into cars which, in turn, are dumped into the skip, which is raised upon an incline to the top of the blast furnace.

Turning now to a more detailed description of the appliances, we may first consider



*Side View of Furnace Plant.*



*View of Stock Yard.*

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

The railroad ore cars, after being discharged in the car dumper, are delivered by a gravity plane.

The working of the system has already been tested, 2371 tons of ore having been deposited on the stock piles by one bridge in 10 hours, which is about half of the maximum capacity.

As stated, under certain circumstances the bridge may be used to deliver the ore directly into the bins. The greater part, however, will probably go into stock, from which it is scooped in 10-ton buckets, to be delivered either direct into the bins or into an electric motor transfer car

#### The Hulett Car Dumper,

built by Webster, Camp & Lane of Akron, Ohio. It is designed to handle either dongolas or wood or steel hopper cars of from 20 to 60 tons capacity. The car dumper, which is shown in engravings reproduced from photographs, consists of a substantial steel structure located at the foot of the inclined loaded ore tracks, on which is a platform to receive the car. This platform is pivoted at one side, and at a height sufficient so that when the platform with the carload of ore is rotated around this

axis it raises the car and, at the same time, discharges the ore over an apron into four smaller bridge cars of 17 tons capacity each, mounted on transfer cars standing alongside of the car dumper. To insure equal distribu-

supplement shows the car dumper, the deflectors, bridge cars and transfer cars clearly.

The car dumper is of same general design as that furnished by the Akron Company to the Buffalo, Roch-

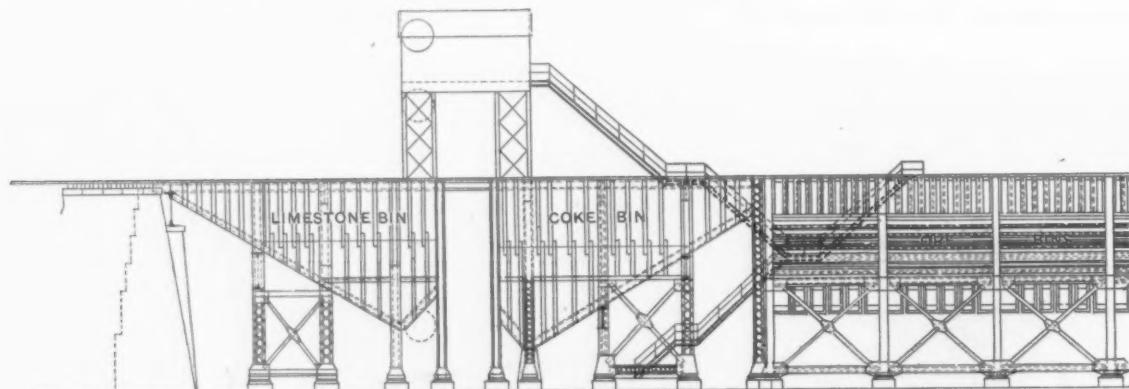


Fig. 3.—Elevation of Bins.

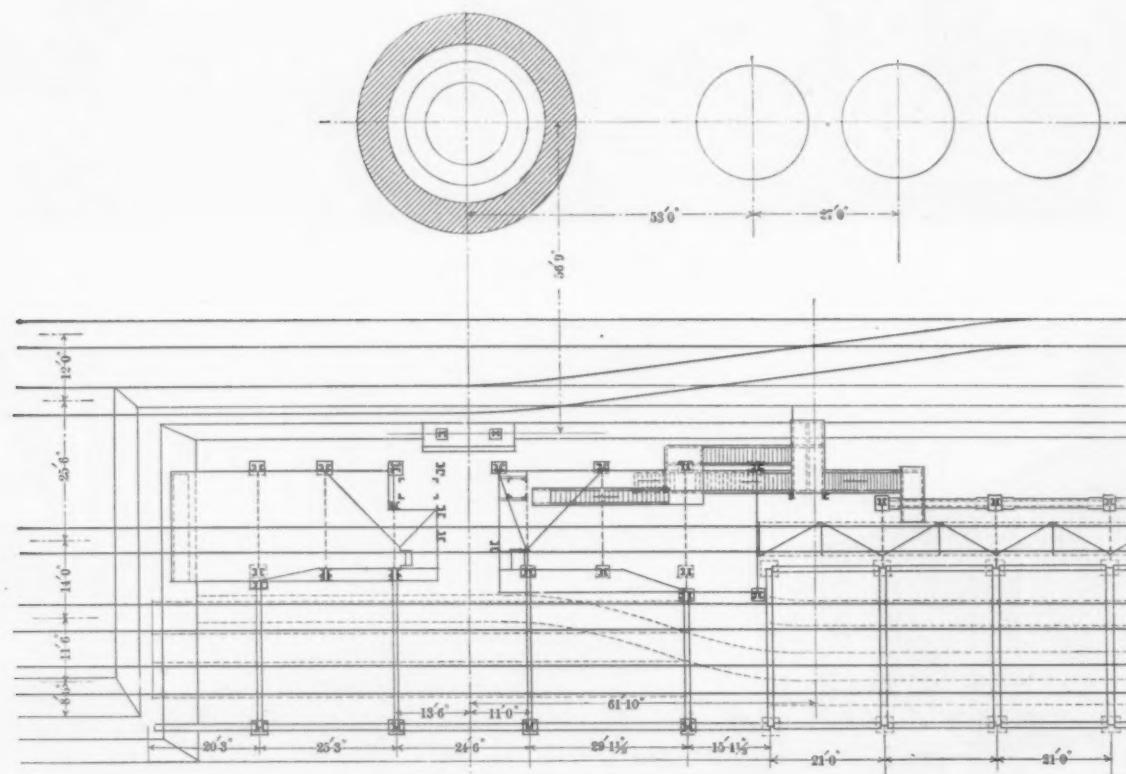


Fig. 4.—Plan of Bins.

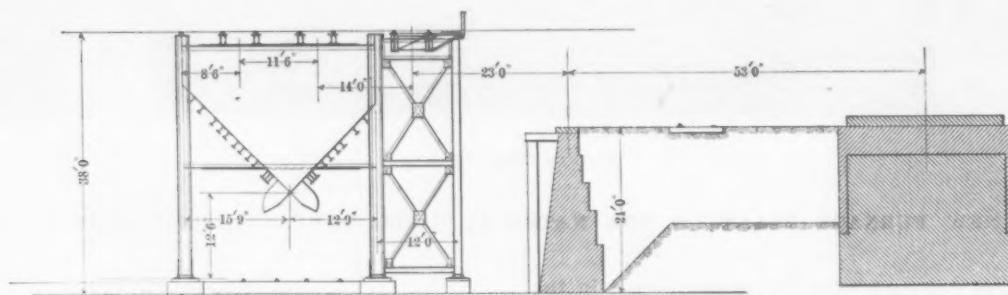


Fig. 5.—Section through Ore Bin.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

tion of ore in the four smaller cars, movable deflectors are pivoted to the apron of the car dumper. These deflectors are moved by a steam cylinder with cataract locking cylinder, both being under the control of the operator. The engraving printed on the accompanying

ester & Pittsburgh Railway, on their coal docks at Buffalo, N. Y., except that the overhead trolley for conveying the material to vessels is omitted. Steam is supplied to the engine for operating car dumper from the blast furnace boilers.

The ore cars, being located on the tracks in the storage yard, are run by gravity over a pit located near one end of the car dumper, in which is a disappearing car or dilly, which is drawn up out of the pit behind the loaded car by winding drums located on the car dumper. The disappearing car carries a push bar which engages the drawhead in the ore car, pushing it up grade into the car dumper.

After a loaded car is run into the car dumper, the operator sets the deflector for either a short-hopper car

dicates clearly the position of these four tracks, which receive the bridge cars from the transfer cars.

#### The Conveyor Bridges.

The conveyor bridges are of 260 feet spans, with a 41-foot cantilever extension over the ore pockets at the end next to the furnaces. They are mounted on a two-track machine tower at the outer end and on a one-track rear tower next to the furnaces, as shown in the photographs.

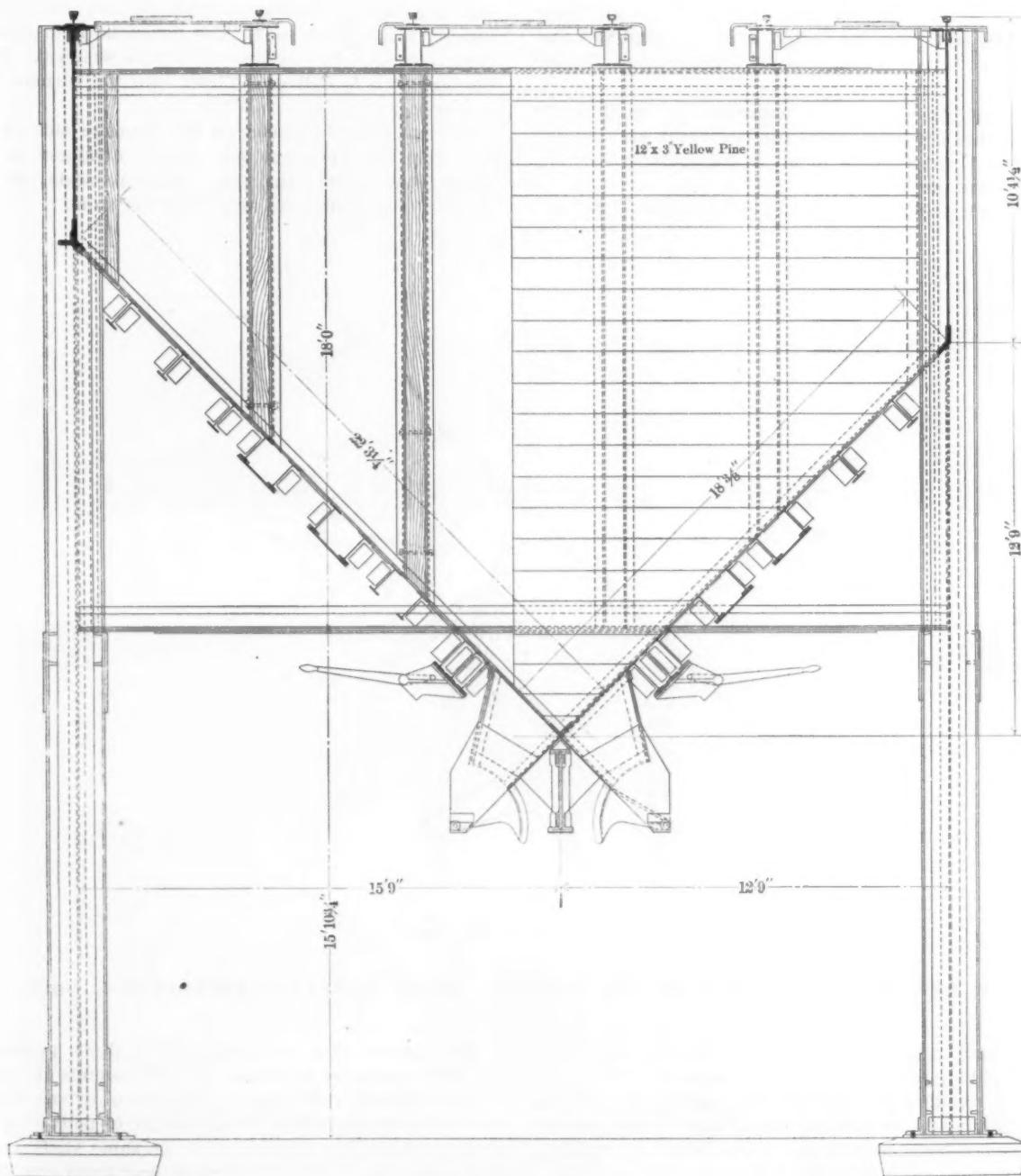


Fig. 6.—Elevation of Ore Bin.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

with ore loaded nearly uniform through the car, or for a long dongola with ore loaded at each end over the trucks. Experience with the machine has already shown that this method is very successful.

The 17-ton cars which receive the ore from the railway cars are of the side-dump pattern, they being mounted, four of them side by side, on the transfer cars. The locomotive places these transfer cars under the front ore machinery tower of the conveyor in alignment with the four tracks on the conveyor, which tracks converge into one main track on the bridge, with switches which are automatically operated by the car as it passes over them. The engraving showing the conveyor bridge indi-

The track on which the cars run passes up an incline from below the machinery tower and through the bottom chords of the bridge, the cars being drawn up this incline and on through the bridge and dumped at any point desired. A second track is suspended below the chords of the bridge with a trolley running thereon for rehandling the ore from the stock pile to the bin or the bin filling car. An automatic bucket is used for rehandling the ore from stock, having a capacity of 10 tons.

The conveyor bridges are moved along the track at a speed of 50 feet per minute by means of gearings connected with two 130 horse-power General Electric motors to each bridge, which also furnish the power

for handling the ore on the bridge, as well as rehandling it from the stock pile by means of suitable drums and gearing connected with the motors. The motors take their current from an overhead trolley above the machine tower. The machinery is located in the main tower, and an operator's house is placed next to the bridge in a position where the operator can have an unobstructed view of the cars as they move on the bridge.

The ore is dumped into a storage pit, the wall on the side next to the furnaces being 36 feet high, and that on the opposite being 24 feet high. The bridge at the lower end is 54½ feet above the bottom of the pit, and 80½ feet at the rear tower, giving a storage capacity of 750,000 tons.

The car dumper has a capacity for handling 30 railroad cars per hour, while the conveyors each handle 30 of the 17-ton cars per hour, or an equivalent of 7½ railway cars per hour.

The force required for the operation of the plant con-

They are double, having six delivery chutes on each side so that they can discharge into cars upon two tracks, and are so designed that there is no dead space in them.

The chutes are opened and closed by doors forming the arc of a circle, which shear the stream of ore, as shown in Figs. 6 and 7. The ore from the bins is delivered into side dumping scale cars, with a capacity of 20,000 pounds, electrically driven by a side trolley. There are two of these scale cars, one for each furnace. They discharge sideways direct into the furnace charging skip.

The two limestone bins are 20 feet wide,  $49\frac{1}{2}$  feet long, and have a maximum depth of  $10\frac{1}{2}$  feet. Their capacity is 570 gross tons. The limestone is discharged into a receiving hopper, in which it is weighed. From this hopper it is delivered direct into the furnace skip by gravity.

The coke bin is placed on the opposite side of the skip from the limestone bin, and is arranged to discharge directly into the skip. The ore scale car discharges its load into the skip from the front.

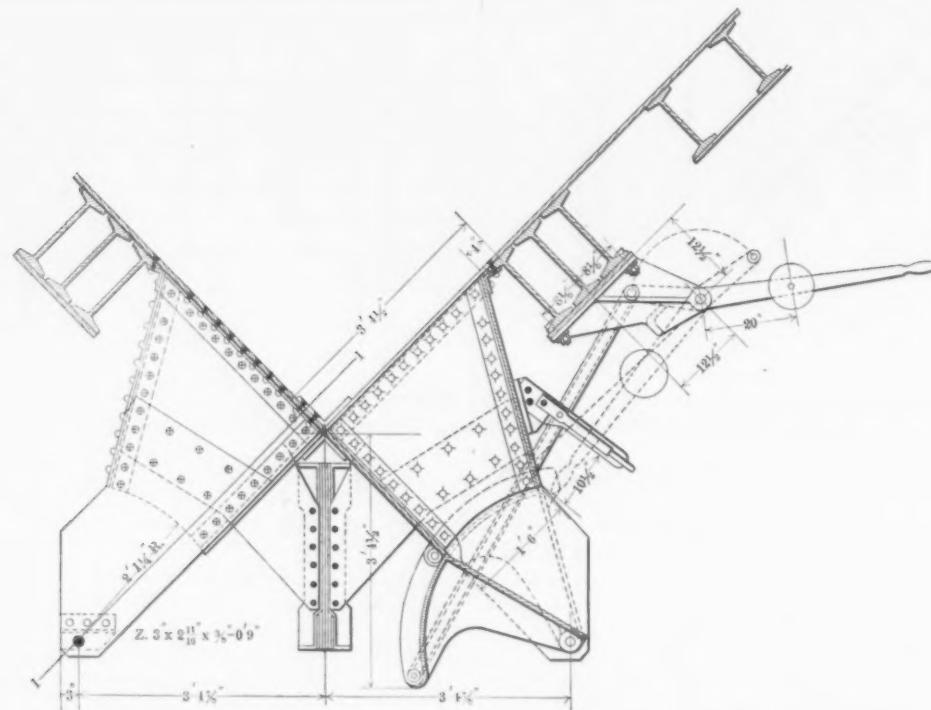


Fig. 7.—Chutes of Ore Bins

## THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

sists of three men to operate the car dumper, including the man who places cars in position thereon. Two operators are required to each conveyor, and three men on the locomotive for moving the transfer cars. The cost of handling ore from railway car to pit or from pit to bins is estimated at less than 1 per cent. per ton.

### The Stock Bins.

The stock is delivered into a series of bins, disposed as shown in the plan, Fig. 2. Each furnace is provided with one limestone bin and one coke bin, and between the two groups are nine ore bins, that being the expected maximum of different grades of ore which may be used in the furnaces. Figs. 3, 4 and 5 show the general disposition of these bins.

The limestone and coke is delivered to the respective bins direct from the cars, which travel on the tracks running over the line of bins. There is an auxiliary rope shifter system for handling the limestone and coke cars during the night shift, so that the switching locomotive is in service only during the day time.

The ore bins, drawings of which are given in Figs. 6 and 7, are 21 feet long,  $28\frac{1}{2}$  feet broad and 23 feet maximum depth, with a capacity each of 500 gross tons.

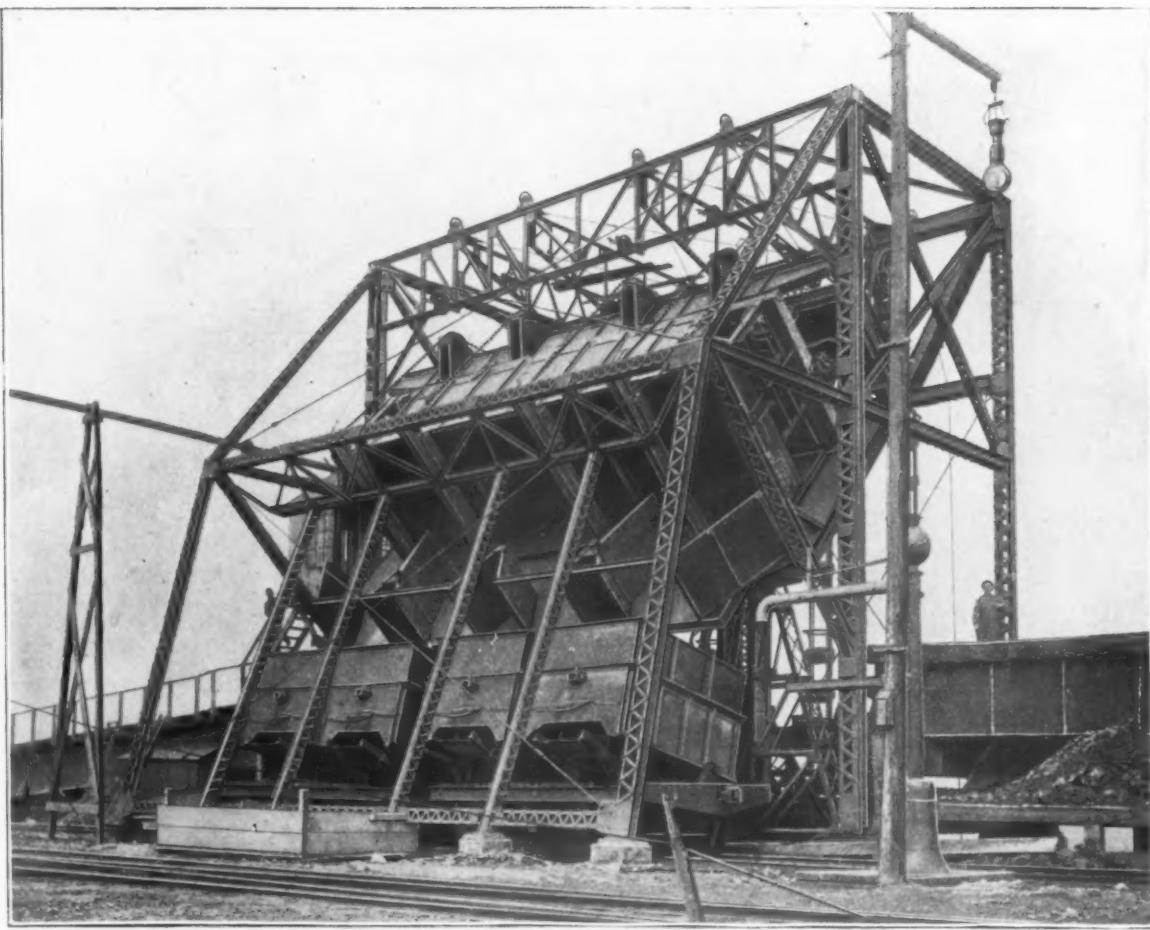
The furnace skip has a capacity of 15,000 pounds of ore, 8000 pounds of limestone and 4000 pounds of coke.

The hoisting apparatus is electrically driven and is automatically controlled, being capable of delivering per hour 40 skip loads of stock. On the same shaft as the motor are two drums; two ropes lead from one drum over the sheave on the furnace top to the skip car. From the other drum a rope runs over a sheave to the counter-weight. The greater portion of this counterweight is released as the skip nears the top; only enough weight still acts to keep the rope taut. The engine house is built over the coke and limestone bins, as shown by Fig. 3. The tower in which the counterweight acts is one of the supports for the engine house.

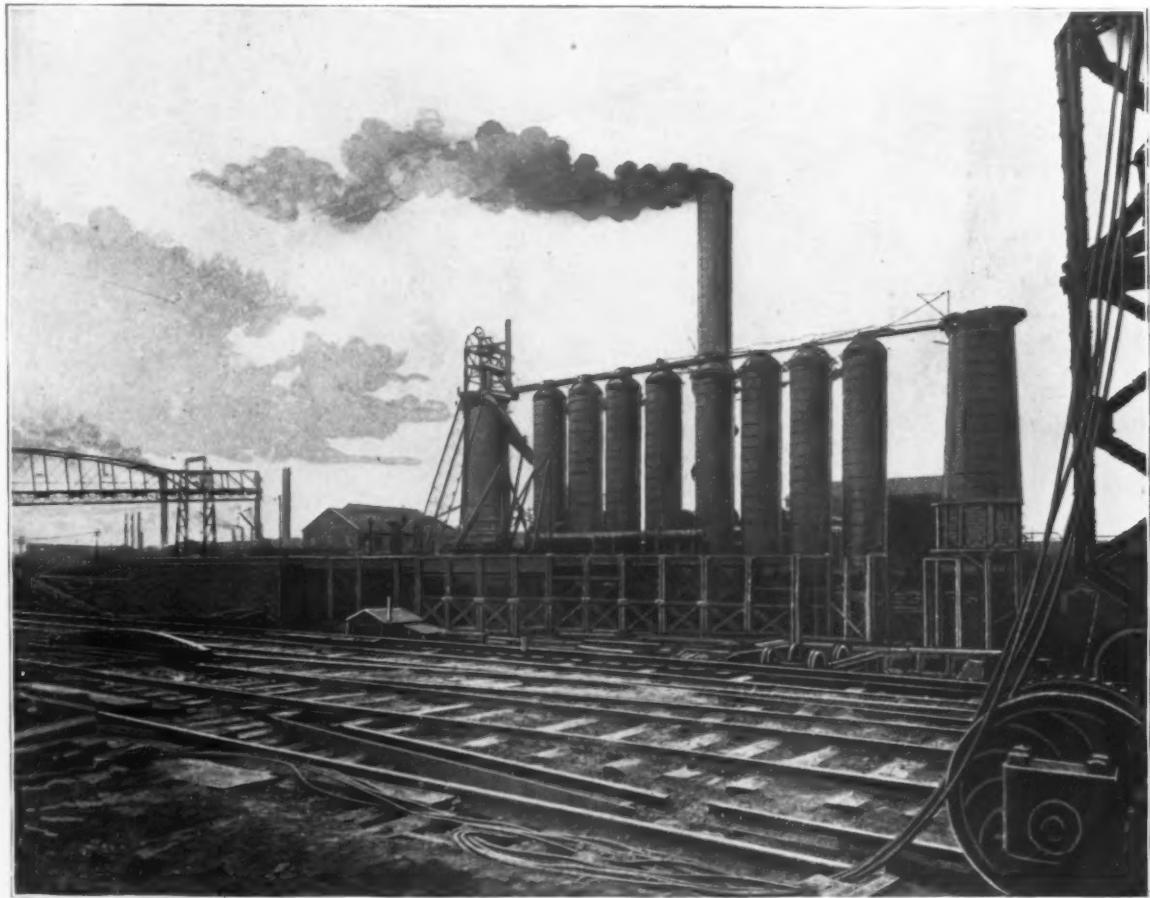
The crew for filling the furnace consists of two men on the scale car, one man at the limestone bin and one man at the coke bin chute, who also controls the skip, and also works the bell at the top of the furnace.

#### The Charging Machinery.

The skip is discharged automatically into the receiving hopper, shown in Fig. 8, this hopper having a capacity to take the contents of one skip load. It is arranged so as to impart to the stock discharged into it a spiral

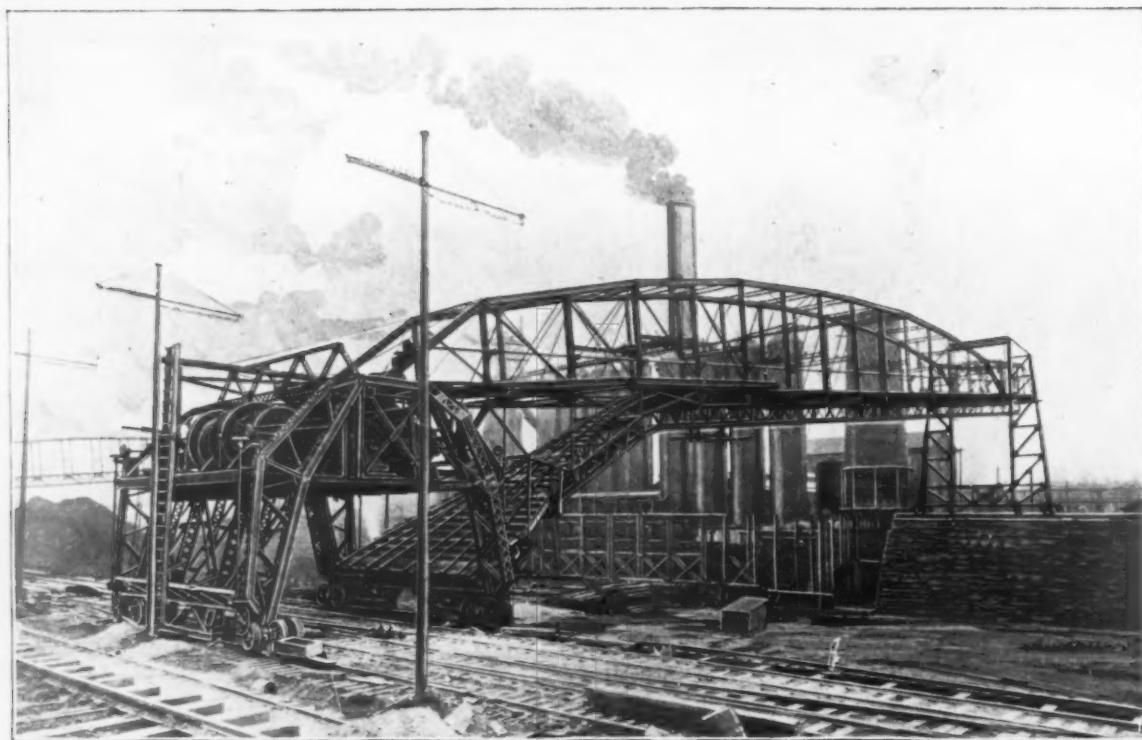


THE HULETT CAR DUMPER SHOWING DEFLECTORS TRANSFER CARS AND SIDE DUMPING BRIDGE CARS.

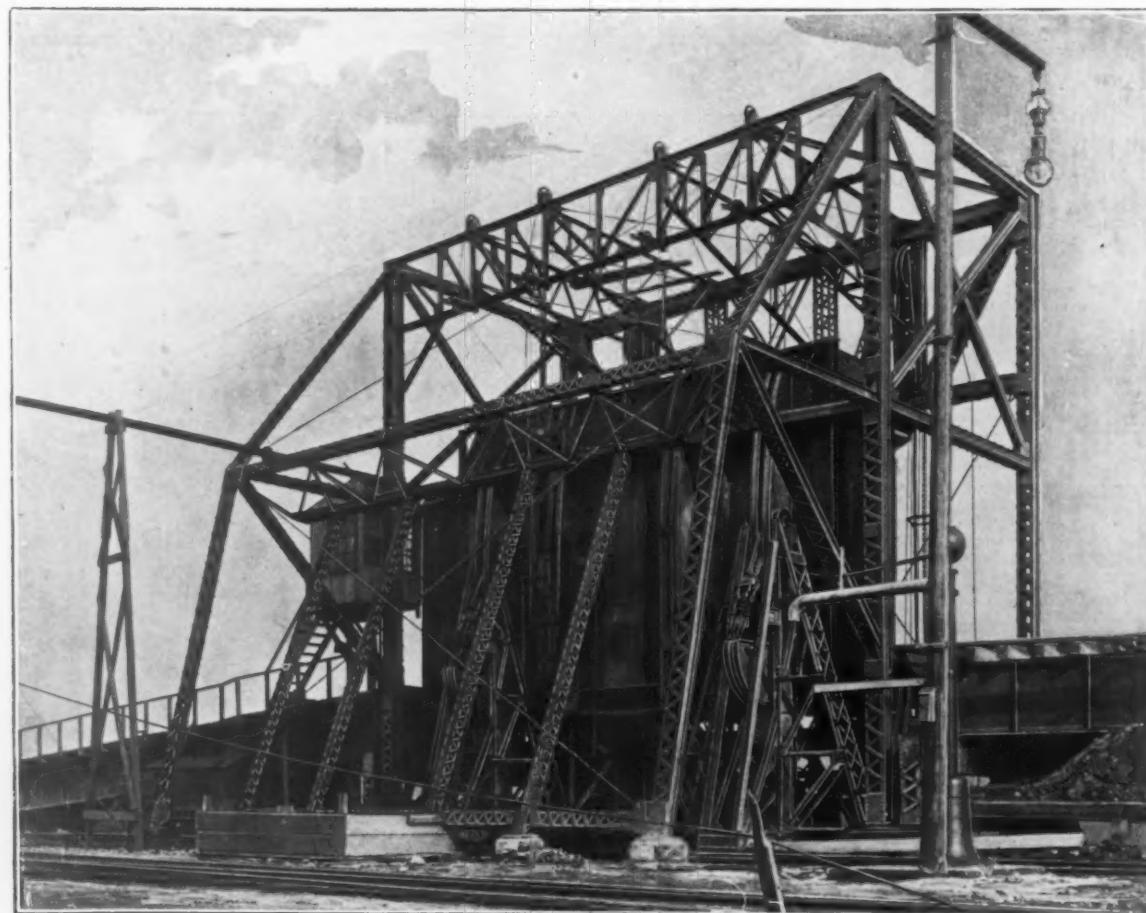


GENERAL VIEW OF FURNACE PLANT FROM A POINT ON OPPOSITE SIDE OF STORAGE PIT. SHOWING COKE, LIMESTONE AND ORE BINS.

**THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY,  
AT YOUNGSTOWN, OHIO.**



SIDE VIEW OF CONVEYOR BRIDGE.



SIDE VIEW OF HULETT CAR DUMPER.

**THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY,  
AT YOUNGSTOWN, OHIO.**

motion, thus securing a uniform mixture. The bell is handled by a 14-inch oscillating cylinder acting on a counterweighted beam, the movement being controlled by the operator at the coke chute in the stock yard. It is lowered independently of the large bell, thus constituting a gas seal. The stock falls into a main hopper hav-

ing the stock line, and have a 12-foot bell. Fig. 9 shows a section of the hearth, which is equipped with 11 rows of Scott copper bosh plates and two upper rows of cast iron plates with coils. There are 16 6-inch bronze tuyeres. The mantle plate is of cast steel, and the eight columns have a height of 27 feet 9 inches. Each furnace is pro-

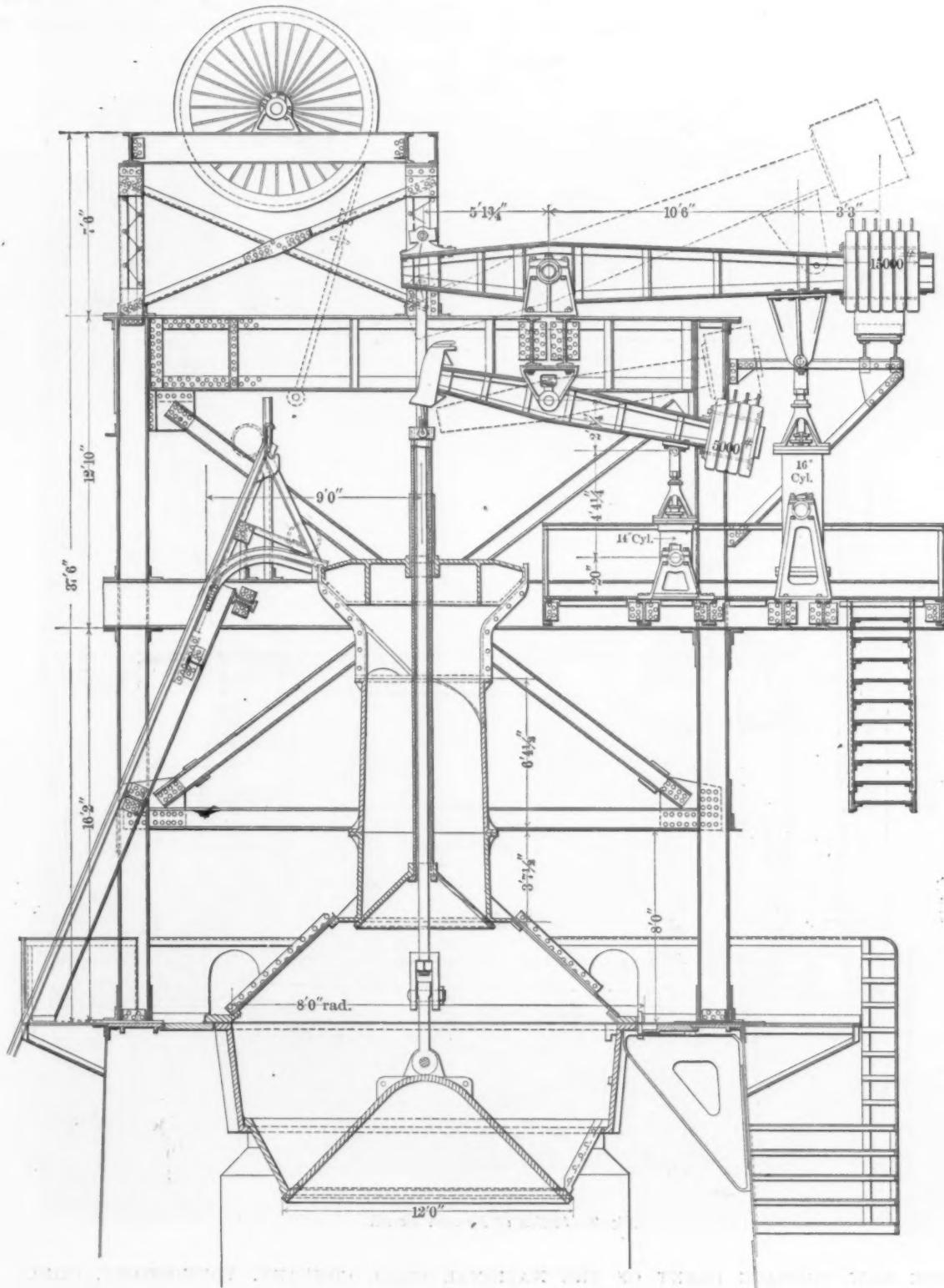


Fig. 8. - Section of Charging Machinery.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

ing a capacity for a burden of 30,000 pounds of ore, with corresponding amounts of coke and limestone. It is discharged into the furnace by the main 12-foot bell, which is controlled by the 16-inch oscillating cylinder shown in the engraving.

##### The Furnace Stacks

proper are 106½ feet high, and have a 15-foot crucible and a 23-foot bosh. They are 17 feet in diameter at

vided with two 5-foot explosion doors, a 2½ foot bleeder and a bifurcated downcomer 7 feet in diameter in the clear.

The dust catcher has a diameter of 30 feet, and the gas is delivered through two Steese horizontal gas washers, 10 feet 9½ inches inside diameter and 27 feet 6 inches long over all. In the Steese washer the gas flows by a series of vertical baffle plates.

Each furnace is flanked by four two-pass Cowper-Kennedy-Roberts hot blast stoves, 118 feet high and 21 feet in diameter. They are provided with side combustion chamber, and are built of the Roberts brick. The track, which serves both furnaces, is 225 feet high, and has an 18-foot inside diameter.

The cast house has become a mere shed to protect the runner, which is arranged to provide for eight 20-ton liquid iron ladle cars, there being no provision whatever

crane. It is equipped with four hoods, heated by furnace gas.

The furnaces are supplied with blast by

#### Blowing Engines

built by William Tod & Co. of Youngstown, Ohio. There are three of these. One of them has been operated for some time, the second is in place, and the third is in the hands of the builders. They are of the vertical, cross

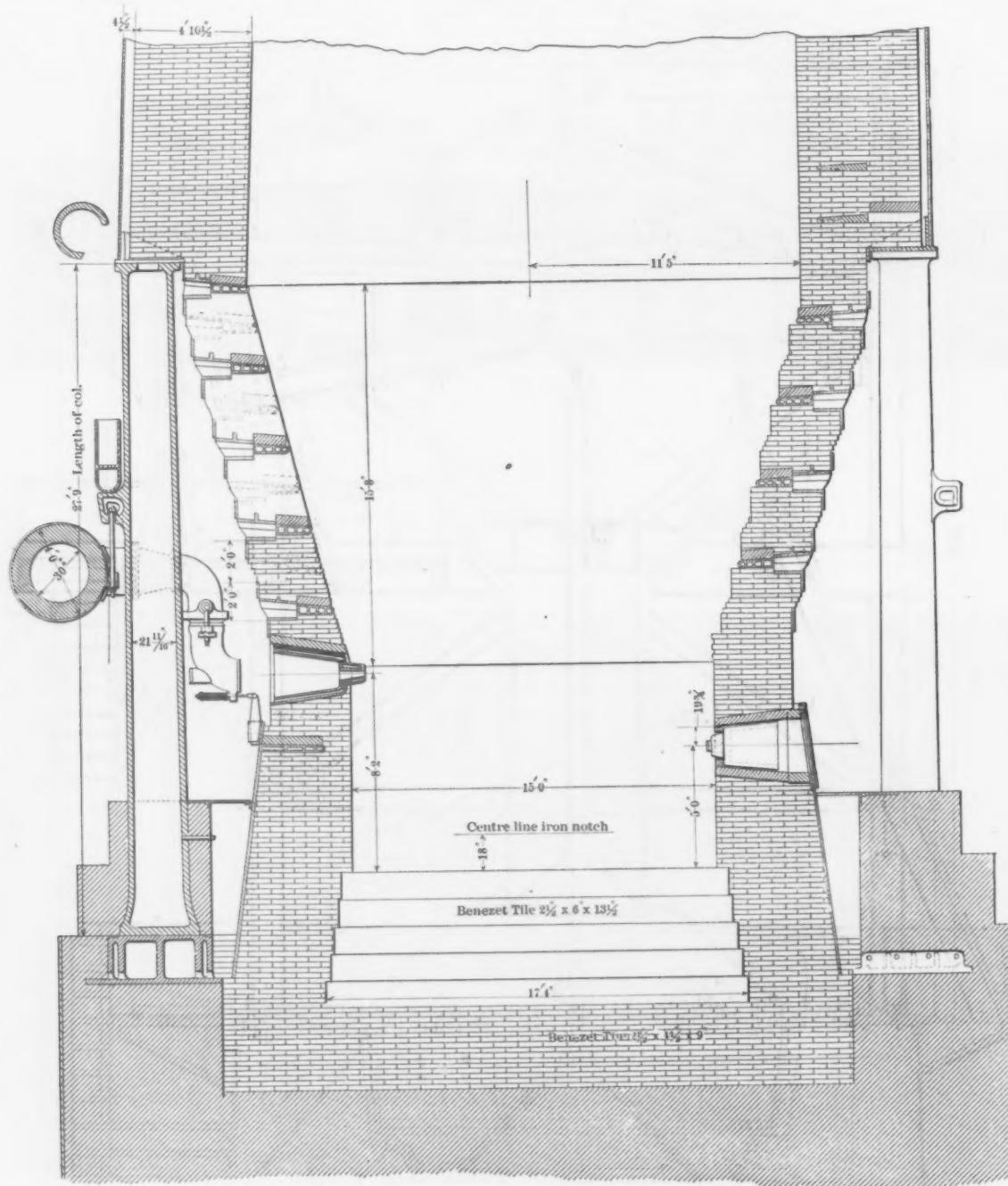


Fig. 9.—Section of Furnace Hearth.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

for casting iron in sand. The plant is arranged for using direct metal at the steel plant. For Sunday metal and for possible contingencies, a Heyl & Patterson pig iron casting machine, with a capacity of 2000 tons per day, is being erected at a point between the ore yards, and the river, not shown on the general plan. The iron ladle cars are of special design, to which we shall refer further on. For the cinder there is provision for running into four cars. The latter, of the Welmer type, have a capacity of 200 cubic feet.

At the place shown in the general plan there is located a ladle house, 60 x 100 feet, spanned by a 20-ton

compound, condensing, quarter crank, steeple type, with steam cylinders 54 inches and 102 inches in diameter, with 60-inch stroke, and two air cylinders 108 inches in diameter, 60-inch stroke. The total weight of the engine is 635 tons. With a steam pressure of 160 pounds gauge, and 26 inches vacuum, the engines will develop 5000 indicated horse-power each at 45 revolutions per minute, and will blow 57,240 cubic feet of free air per minute to a pressure of 25 pounds per square inch. A general view of the engines is shown in Fig. 10.

The bed plates weigh 56 tons each, and two are required for each engine. They are made in box section,

cored, and so designed as to give a total area of bottom plate, excepting a few small holes for removing cores, for bearing surface on the foundation. The housings are bell shaped, made of two pieces, and inclose the cranks and connecting rod. The guides are circular, in one piece, and were bored out in a vertical position to 70

are provided with removable shells on the top and bottom. The fly wheel is made up in ten segments, bolted at the hub, and tied together with three shrink links at each joint in the rim. The rim section is 19 x 19 inches, and the wheel diameter is 24 feet, and the weight 70 tons. The connecting rods are of forged steel, and 12½

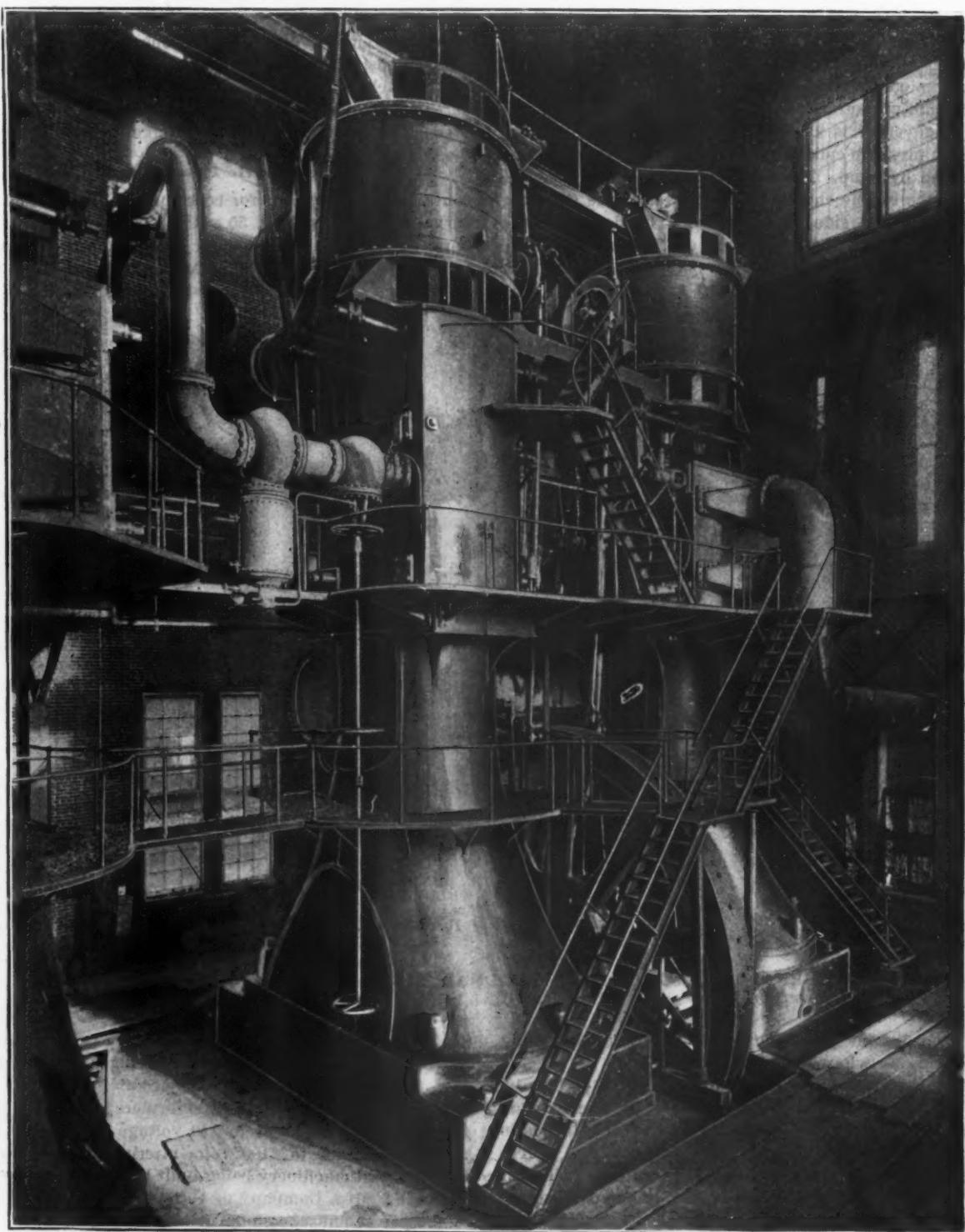


Fig. 10.—General View of Blowing Engines, Built by William Tod & Co., Youngstown, Ohio.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

inches diameter, with 31 inches circular bearing faces. The length of the guide bearing surface is 103 inches.

The crank shaft is 18 feet long and 28 inches in diameter, made of forged steel, solid, and reduced to 26 inches diameter at the bearings. A conception of its size is conveyed by Fig. 11. The crank disks are cast steel, circular and counterweighted. The weight of the shaft, the two crank disks and the fly wheel hub, shown in Fig. 11, is 56 tons. The main bearings are 26 x 44 inches, and

feet between the center of the crank pin and the wrist pin, and are fitted with marine ends. The crank pins are 18 x 15 inches. The wrist pins are 16 x 16 inches. The bearing surfaces at wrist and crank pins are bab-bitted.

The cross heads are cast steel, and connected to the steam pistons with two piston rods each, 8 inches in diameter and of forged steel. The shape of the cross head permits the adoption of large bearing surfaces be-

tween the cross heads and guides. The length of the cross head shoe is 43 inches, and the two circular faces are 31 inches wide.

The high and low pressure cylinders are 54 inches and 102 inches in diameter, respectively, and the volumetric ratio is 1 to 3.56. The stroke is 60 inches, and the piston speed at 45 revolutions per minute is 450 feet per minute. Both cylinders are equipped with Corliss valves, the high pressure valves being 9 inches in diameter by 65 inches long, and the low pressure valves are 15 inches in diameter by 117 $\frac{1}{4}$  inches long. The weights of the completed cylinders, including heads and valves, are: High pressure 20 tons, low pressure 45 $\frac{1}{2}$  tons.

The governor is a pendulum type, and acts only on the high pressure cylinder, the low pressure cut off being regulated by hand. Provision is made that in case one side of the engine should be disconnected, the governor will control the side in operation. The design of the governor is such that the speed of the engine can be changed at the governor from 20 revolutions per minute

rated at 7000 horse-power. The boilers are supplied with feed water by pumps located at the blooming mill, the water being heated by a Cochrane feed water heater of special design.

The pumping station, located as shown in the general plan, is equipped with three horizontal duplex triple expansion Snow pumps of 6,000,000 gallons capacity each, the water being taken from the river by a 5-foot tunnel 707 feet long, driven through the rock. Two centrifugal pumps, of 10,000,000 gallons capacity, are used for condensing, the Worthington type of condenser having been chosen. They are used also for the low pressure service. A stand pipe is provided, 20 feet in diameter and 131 feet high, the intake being 3 feet in diameter.

#### The Electric Power Plant

contains the equipment for both the steel works and the furnaces. The building, 55 x 187 feet, contains two 850 horse-power McIntosh-Seymour engines direct connected to two 550-kw. generators. As spares, there are two



Fig. 11.—Crank Shaft of Tod Blowing Engine.

#### THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

to 50 revolutions per minute, the governor controlling the engine at whatever speed set.

The air pistons are connected to the steam pistons by one forged steel piston rod 9 inches in diameter on each side of the engine. Blowing tubs are 108 inches in diameter, and have a capacity of 57,240 cubic feet of free air per minute at 45 revolutions per minute. The air valves are operated through a wrist plate, and so arranged that the movement is positive, yet would be controlled by the air should any accident befall the operating gear. The inlet valves are cast steel and open inwardly. The outlet valves are pressed steel, opened by the air pressure, and are closed positively. All air openings are designed to have sufficient area for a piston speed of 500 feet per minute. The accompanying engravings, Figs. 12 to 15, illustrate the design.

The engines are housed in a building 59 feet 9 inches x 170 feet, and 66 feet high. The whole area is controlled by a 30-ton electric crane, whose runway is 56 feet above the floor.

#### The Steam Plant

is located as shown in the general plan in two boiler houses 40 x 178 feet. Each contains five batteries of Sterling boilers, two in a battery. The entire plant is

250 horse-power Buckeye engines driving two generators of 187 kw. and one Ball engine driving a 200-kw. generator.

There are two rotary transformers which step up from 250 direct current to 170 voltage alternating current, and thence to 2100 volts alternating current, all the electrical machinery being built by the Westinghouse Electric & Mfg. Company of Pittsburgh. A department of the power house, commanded by an overhead electric crane, is devoted to rewinding and repairs.

#### The Hot Metal Cars

shown in Figs. 16 to 20 are of new design and embody a series of interesting features. As will be seen from the end elevations, Figs. 16 and 17, the ladle is tilted or rolled by the trunnion to and fro, through the intervention of the rack. Dotted lines in Fig. 16 indicate the extreme position of the ladle when tipped. Section Fig. 20 indicates how by means of rotating the spindle the yoke is moved in one or the other direction. The advantage of this arrangement is that the ladle may be lifted off the car for relining without dismantling the tilting arrangement, which is well protected and is locked in all positions. The fact that the thrust is directly applied to

**the trunnion is important. It makes the tilting easy and regular.**

The tilting may be effected either by hand gear or by electric motor, an equipment for that purpose being provided at the steel works.

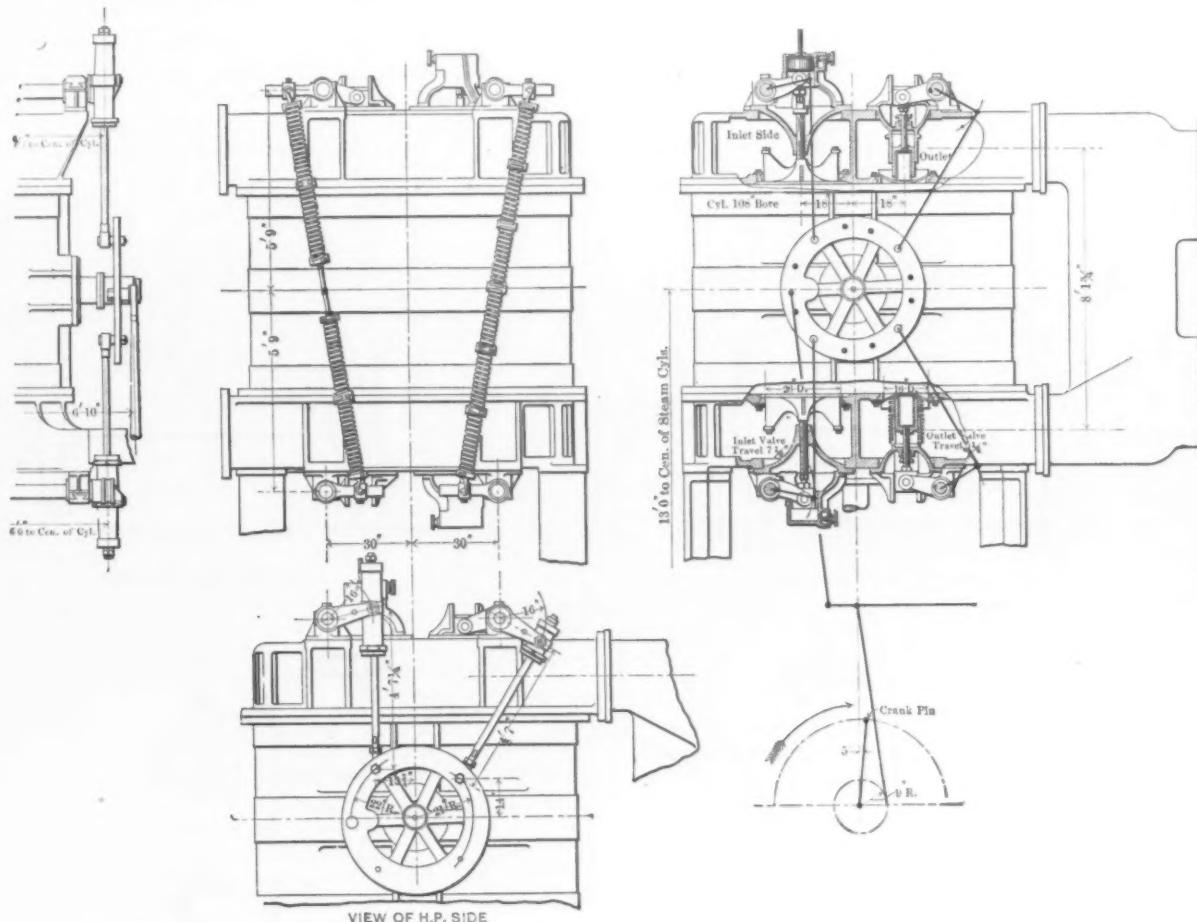
The ladle cars are equipped with automatic couplers and with outside boxes.

Such are the main features of the plant, which represents the embodiment of the most advanced American practice. It is believed that not only will the new works be entitled to claim pre-eminence as the most economical from the point of labor saving equipment, but also that it is first from the point of view of low cost of installation. It is probable that the first furnace will be blown in during the month of January, and that the second will

large city in the country, but so far have been unable to obtain a sufficient number of men.

## New Steel Works at Milwaukee.

The Illinois Steel Company have in contemplation extensive improvements in their Milwaukee plant. These improvements involve the erection of at least two blast furnaces, steel converting works and probably mills for the manufacture of structural steel. It is expected that a beginning will be made next spring and that the work of construction will be pushed as rapidly as manufacturers of machinery will be able to furnish the large quantity of apparatus needed. Two years or more may be required for the completion of the improvements as planned. The Milwaukee Works will then be independent of the Joliet or South Chicago



*Figs. 12 to 15.—Blowing Engine Air Valves.*

THE NEW FURNACE PLANT OF THE NATIONAL STEEL COMPANY, YOUNGSTOWN, OHIO.

follow in the month of March, 1900. The managers are not willing to commit themselves beforehand as to the capacity of the furnaces, but those who are familiar with the extraordinary records made by the steel works which the blast furnaces are to support feel little doubt that the broom will soon crown the stacks.

The Pressed Steel Car Company of Pittsburgh are decreasing the car building capacity at their Woods Run plant and transferring the car equipment to the new works at McKees Rocks, Pittsburgh. This has become necessary by reason of the large orders for bolsters which the company have recently received from railroads in different parts of the country. The Pittsburgh and Joliet plants have become overcrowded with orders for this kind of work, and the Woods Run plant has been utilized to aid in fulfilling the contracts. The orders obtained a short time ago from the New York Central and Pennsylvania Railroads for \$2,500,000 worth of bolsters with which to equip 15,000 cars is taxing the capacity of the company's plants to get it out on contract time, though it is expected that the requirements will be fully observed. The company have been advertising for blacksmiths, riveters and other skilled help in every

Works of the company for their supply of steel. The Milwaukee plant has this year far exceeded its previous production, drawing so heavily upon the other works for raw material that the time is at hand when it must make its own supply. The officials of the company are not disposed to give out much information as to their plans, and probably nothing would have been disclosed now if the city of Milwaukee had not been about to take steps to open a street through the center of their property. As this would have seriously interfered with the contemplated improvements, the representatives of the company felt obliged to state the reason why they preferred the proposed street should not be opened.

An admirable and exhaustive monograph on the alloys of iron and nickel has been published by the well-known metallurgist, Robert A. Hadfield of Sheffield, England. It is a paper read before the British Institution of Civil Engineers in March last, but with appendices and discussion is a volume of about 170 pages. It embodies much original work of investigation and besides is practically a review and summary of the whole literature of the subject.

Work has been begun on six new mills for the plant of the American Tin Plate Company, at Elwood, Ind.

## Canadian News.

### Freights on Hardware.

TORONTO, December 18, 1899.—At the last meeting of the Montreal Metal and Hardware Association, on the 13th inst., the action of the railway companies in cancelling the "commodity" rates, and thereby in effect discriminating against Montreal manufacturers and distributors of metals and hardware, was discussed. The matter is in the hands of a special committee, which finds it rather a delicate one to report upon at once, and which, consequently, is continuing its consideration of the question. It is an easy matter to select commodities on which the rate out of Montreal seems to be discriminatory, but it is often found that there is a favorable

Canada as a "sacrifice" market in those days. As Canadian manufacturers are now busy, running their works, many of which have been enlarged, to their full capacity, and, moreover, as American competition has eased up in consequence of the extremely active demand in the United States, the railway companies have decided to charge the same rates for the manufactured "commodities" as for everything else. It is against this that the Metal and Hardware Association is protesting, claiming at the same time that the railway freight rates from the United States are much below those now charged to Canadian shippers.

### Fort William Furnace Projects.

The resolutions passed by the Fort William Town Council in respect to the iron and copper works the Mat-

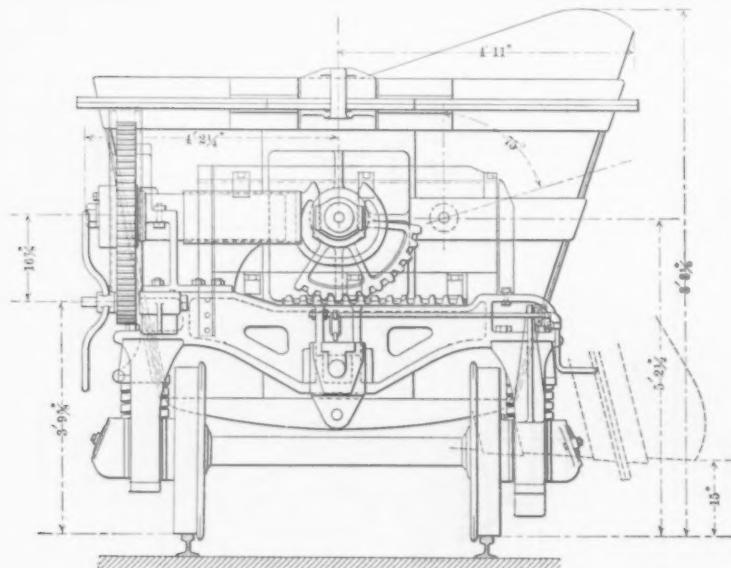


Fig. 16.—End Elevation.

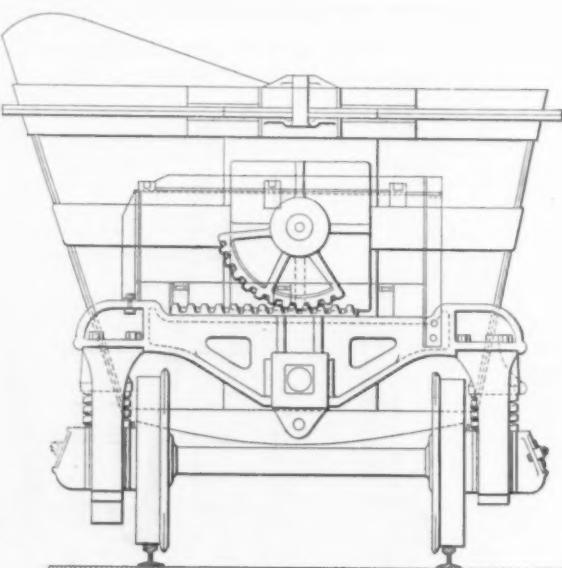


Fig. 17.—End Elevation.

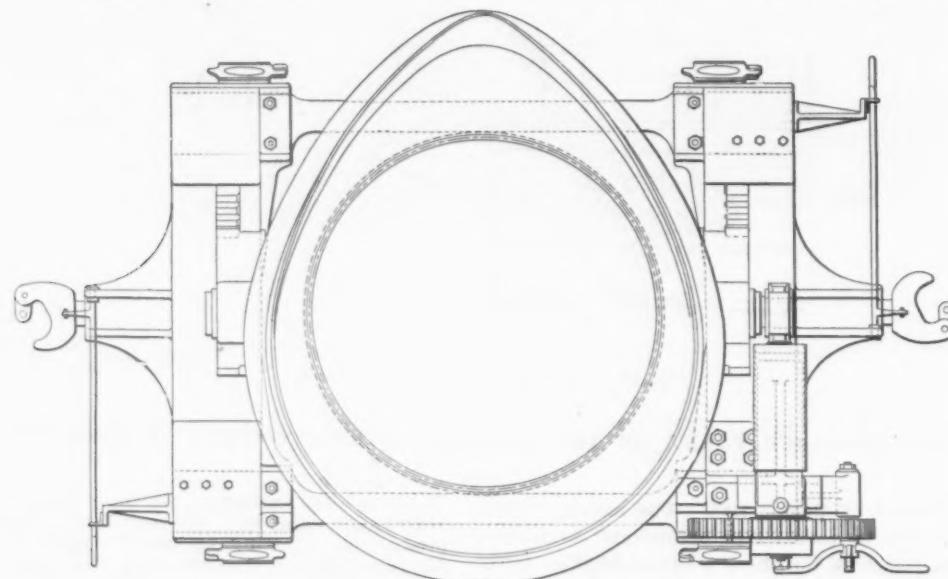


Fig. 18.—Plan.

### HOT METAL CAR.

return rate to offset this. Hence, the committee finds it necessary to go into the full effect of the tariff of rates before coming to a conclusion as to the protest to be made to the railways.

The "commodity" rates which the roads have just abolished were established years ago, when industry in Canada was in a depressed state, and when it seemed that unless the railways showed it some favor there would be little or no profit reaped. Hence, to foster trade for themselves the railways deemed it good policy to carry many heavy products of Canadian manufacturers at rates lower than those of the general tariff. By this means it was hoped that the Canadian manufacturers would be better able to make head against the competition from the United States, which was using

tawin Iron Company propose to erect provide as follows: That there are to be submitted to the taxpayers by-laws authorizing the payment to the company by the Council of bonuses aggregating \$75,000; one being \$50,000 as a subsidy for a 50-ton charcoal blast furnace; the other one, of \$25,000, for a 60-ton copper smelter. The sanction of such money by-laws by the votes of a majority of the ratepayers is not all, however. The by-laws will have to be made legal by an act of the Ontario Legislature. Six months after such act has been carried, the company are bound to commence the buildings, which are to be completed within 18 months. The cost of the iron furnace is to be not less than \$150,000, and it must be kept in blast not less than 250 days every year, turning out 50 tons of charcoal pig every 24 hours.

It is further stipulated in the agreement that payment to employees is to be made monthly and in cash, and that the company are not to engage in any retail business.

The Board of Trade of Fort William has approved the arrangements.

**National Cycle Company.**

It has been decided by the National Cycle & Automobile Company to establish their works not, after all, in Toronto, but in Hamilton. Hamilton offers very strong inducements and Toronto offers none. Cheap electric power is the main inducement. A permanent factory, costing \$65,000, is to be built. Hamilton is showing great enterprise as a manufacturing center, especially a steel and iron goods manufacturing center. This is a natural development of two departures that

With the starting up of the Cataract Power Company's works at Decero Falls, 32 miles away, began last year a new era for Hamilton. That led to quite a reorganization. First, the Electric Lighting Company of Hamilton were absorbed. Next the Street Railway Company. Then two suburban electric lines were bought up. At the same time the company were gaining ground in the manufacturing establishments, and now they furnish power to several of them. The National Bicycle Company have been attracted by the cheap power the Cataract Company offer.

C. A. C. J.

According to Robert Pitcairn, general agent and superintendent of the Pittsburgh Division of the Pennsylvania Railroad, the prospects for commencing work on the proposed new Union station at Pittsburgh were

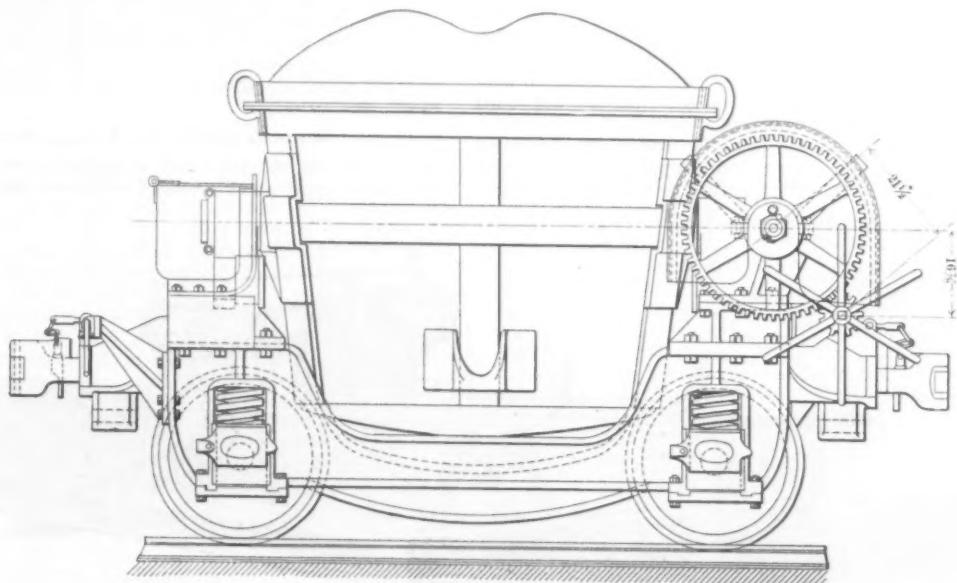


Fig. 19.—Side Elevation.

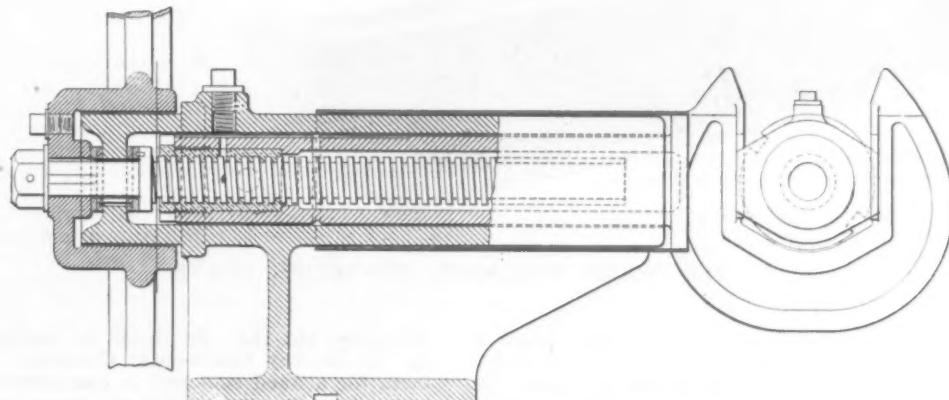


Fig. 20.—Section of Tilting Mechanism.

**HOT METAL CAR.**

have been made in recent years. The first of these was the starting of the blast furnace. These works have run steadily and to full capacity almost from the start. The first local evolution of them was the increasing of the foundry business in Hamilton. It was always a great stove making center. It is now a greater one. The rolling mills of the city, in turn, began to use puddled bar, instead of wholly scrap, thus increasing the local demand on the works of the Blast Furnace Company. Finally the Furnace Company and the Rolling Mills Company amalgamated. The next outcome was the steel plant, now in course of construction. After the unfolding of the steel industry, Hamilton began to be looked upon as the natural point for the works of the \$20,000,000 Nickel Steel Company, and this company, it is now said, have secured an option on 500 acres of land outside Hamilton limits. Naturally, the drift of iron and steel consuming industries, like the Bicycle Company, will be toward Hamilton. The second of the departures referred to above as leading to Hamilton's present position as a manufacturing center is cheap power.

never as bright as they are at present. Mr. Pitcairn says that he did not know that there would be any change in the plans completed some time ago for the new station. He said that it was possible that if there was any change it would be in the width and length of the proposed structure. He said that the recent allotment of \$13,000,000 made by the company had nothing to do with the building of the new station, as money for that purpose has always been ready. He continued: "Naturally that money will be appropriated for the betterment of the road, but just where it will be used is not definitely known. The Pennsylvania Railroad Company have always used immense sums of money for improvements on their road when times were prosperous. They believe in taking advantage of the good times and look to the betterment of their system."

The thirtieth annual meeting of the American Institute of Mining Engineers will be held at Washington, D. C., beginning on Tuesday, Feb. 20, 1900.

### The Moore Pneumatic Traveling Crane.

The pneumatic traveling crane built by the Chisholm & Moore Mfg. Company of Cleveland, Ohio, employs compressed air for all its movements. The motor consists of two double oscillating cylinders set at right angles in an air tight case. There is a movable valve mechanism, as the oscillation of the cylinders opens and closes the ports. A small quantity of oil is kept in the case so that the crank in revolving lubricates itself and dashes the oil on the valve seats, from which the air carries it through the ports in sufficient quantity to thoroughly lubricate the pistons. The air ports are controlled by a slide valve which closes them when on a center, and starts or reverses the motor as it may be turned to the right or left. The valve is thrown by an eccentric attached to a hand wheel or lever so weighted that it is self closing when released.

The high speed of the motor is reduced through differential gearing to the speed desired for the winding drum. By an ingenious arrangement of the reversing valve the motor is made to drive through straight line gearing also and still retain its self sustaining and safety features. In this form the use of a vent valve permits the lowering of the load by relieving the back pressure of the pistons, thereby materially reducing the consumption of air. In constructing a pneumatic crane

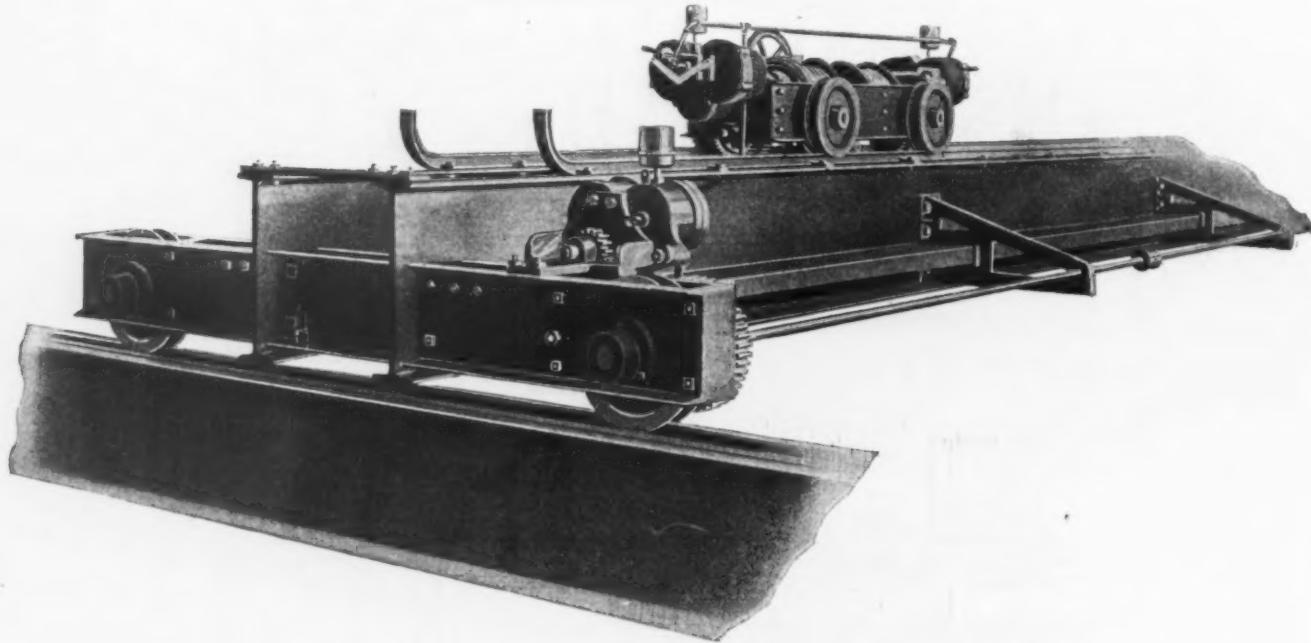
### The Armor Plate Imbroglio.

WASHINGTON, D. C., December 19, 1899.—The Secretary of the Navy has forwarded to Congress an interesting memorandum prepared by Admiral O'Neil, Chief of the Bureau of Naval Ordnance, urging the prompt settlement of the armor question, especially as it relates to the battle ships "Maine," "Ohio" and "Missouri," and discussing in some detail the advantages of the so-called Krupp process, the inadvisability of the construction of a Government armor factory, and the extent of the development of private armor factories throughout the world. This memorandum will form the basis of the deliberations of the naval committees of both houses, which will begin immediately after the holiday recess, and the purpose of which will be to devise some means of solving the problems which now confront the Navy Department in view of the unprecedented legislation of the last Congress on the armor question.

After summarizing the history of the controversy concerning the price of armor Admiral O'Neil takes up the conditions under which Krupp armor can be obtained and its relative advantages over so-called Harveyed armor. He says:

#### Who Controls the Krupp Process.!

"It is learned that the so-called new Krupp process was developed at the works of Fried. Krupp, at Essen,



THE MOORE PNEUMATIC TRAVELING CRANE.

for handling heavy loads, the manufacturers found it advisable, in order to bring the consumption of air within the capacity of an ordinary compressor, to equip the carriage with two independent motors and winding drums, each carrying its own load hook, one geared to lift heavy loads at a slow speed and the other geared to handle light loads at a proportionately higher speed. By this two-speed construction a crane will handle 10-ton loads at a speed of 5 feet per minute and 3-ton loads at a speed of 15 feet per minute, with one-third of the air consumption and compressor capacity that is required in a one-speed crane which handles all loads up to 10 tons at the rate of 15 feet per minute, the latter requiring an air supply greater than it is usually convenient or desirable to furnish. The infrequency with which in most plants the maximum load is handled renders the additional time consumed a matter of small moment, the required speed being obtained on the lighter loads, which comprise the most of its work.

The racking motor applied to the crane will give any desired travel speed up to 150 or 200 feet per minute. In cranes of short span, hand power is frequently preferred for the carriage travel, although when the movement is by motor also the air supply for all the motors is brought through one flexible rubber hose. The bridge is formed of two I-beams, and the trucks each of two channels passing through slots cut to fit them in the webs of the I-beams and fastened thereto by connecting angles. When the span is great the I-beams are stiffened laterally by channels horizontally riveted to the webs of the beams. The truck wheels and carriage wheels are all steel roller bushed.

Germany, but that the rights to manufacture are held by the Harvey Continental Company, who dispose of them for a fixed sum and in consideration of a royalty at an average price of \$50 per ton on all armor manufactured by that process; the agreement providing that the information necessary to manufacture the same shall not be imparted to any but authorized agents, and that no tests shall be agreed to in this country more severe than those specified in Europe.

"It is further understood that certain features of the process are patented; probably certain details of the apparatus used in the process of cementation; but little importance, however, is attached to this fact. Parties acquiring the rights to manufacture are instructed in the metallurgical and other details of the process at Krupp's works. So far as secrecy is concerned, it will be impossible to maintain it absolutely, and there would be but little difficulty in learning all the details of manufacture if it was desired; but a mere knowledge of the methods employed in making Krupp armor would not alone be of much value to any one, as possessing information is one thing and having the means and ability to use it is another. Experience and expert knowledge are indispensable and it requires time and costs much money to gain them.

"Secrecy is understood to be an obligation imposed by the company who control the Krupp process, but such provision is not uncommon in manufacturing industries, where so-called trade secrets are frequently met with. The method of making certain kinds of powder, armor piercing projectiles, alloys of various kinds, and processes employed in producing articles is often not

patented, but is guarded as a trade secret for reasons easily understood; hence no significance should be attached to the fact that the Krupp process for making armor is referred to as a secret process.

#### Difference Between Harveyed and Krupp Armor.

" Aside from the difference in character of the alloy, there is a marked difference in the process of manufacture. Without entering into minute details, it may be stated that armor made by both processes contains nickel to nearly an equal amount, Krupp armor having about three-fourths of 1 per cent. more of nickel than the Harveyed, entailing an additional cost of \$5.61 per ton of plate. The charge for the ingot for a Krupp plate contains about 45 pounds of chrome metal per ton of ingot, costing 25 cents per pound, or \$11.25 per ton of ingot; but as the ingot weighs on an average two and one-quarter times as much as the finished plate, the addition of chrome would cost \$25.31 per ton of plate. On remelting scrap containing chrome, the chrome contained in it is entirely lost.

" In addition to the above mentioned alloys, a special alloy is incorporated, the character of which is not known to the writer, but which is said to cost \$2.25 per ton of plate.

" At the above figures the increased cost of material per ton of plate is \$33.17, to which, if a royalty of \$45 per ton is added, the additional cost of Krupp plate would be \$78.17 per ton. The increased price asked by the manufacturers over that now paid for Harveyed plates (\$400 per ton) is, however, \$145 per ton, or \$66.83 in excess of the above figure; and this difference is claimed by the manufacturers to be a legitimate charge, due to decreased output; to losses in ingots and plates; to a greater number of processes necessary to produce Krupp plates; to extra cost of machining on account of the great hardness of the Krupp plates; to cost of materials necessary to produce the deep, hard face which characterizes Krupp plates, and to interest charges on plant and working capital, which must be divided up on a less number of tons output; and further, that if they supply armor having greater resisting qualities than that heretofore possessed by plates of equal thickness, it is a better article, and hence is worth more money, aside from its intrinsic value.

" The use of chrome in steel is known to be attended with considerable difficulty. It was tried years ago in connection with the manufacture of armor, but without success; but improved methods and increased knowledge have overcome difficulties which then seemed insurmountable.

" Ingots containing chrome are liable to crack in the early stages of the manufacture of armor plate, and in casting they are not infrequently lost, owing to the flowing of the chromium into the slag, and it sometimes happens that no trace of chromium is found in the ingot, although the proper quantity had been introduced into the charge.

" It is well known that steel containing a certain portion of chromium is susceptible of taking a high degree of temper, and that its presence imparts to steel the property of keeping carbon in the form of 'hardening carbon,' and that it raises the limit of saturation for carbon, and, therefore, its presence in armor plate undoubtedly greatly facilitates the process of supercarburization.

" Harveyed armor is supercarburized by contact under a high and prolonged degree of heat with a solid carburizing material (charcoal), oxygen being carefully excluded. The process cannot be reduced to an exact science, nor by means of it can carbon be introduced into the face of a plate beyond a certain depth—namely, from 1 to  $1\frac{1}{4}$  inches.

" Experience has shown that plates of given thickness, when treated by the Harvey process, under certain conditions of heat for a given time, may be expected to give fairly uniform and satisfactory results, and such is often the case; nevertheless, there is an element of uncertainty about it.

" In the Krupp process supercarburization is accomplished by means of a hydrocarbon gas, and treatment can be carried on until satisfactory results are obtained, frequent tests being made to determine when such is the case.

" Harveyed plates are water tempered only, whereas Krupp plates are both oil and water tempered, and in the manufacture of the latter it is essential that the plates be not allowed to get cold between certain stages of the process.

" The number of processes is said to be greater in the case of the Krupp than of the Harveyed armor, and this is believed to be correct; but the process of reforging is not applied to Krupp plates, nor is the process applicable to very thin plates or to those likely to require much rectification, unless they are left untempered.

" The temperature of supercarburization is said to be considerably lower in the Krupp than in the Harvey process, which is favorable to the product.

" When properly carburized and tempered, which operations frequently have to be repeated several times, the face of the Krupp plate has an extraordinary degree of hardness, which extends into it with gradual decreasing hardness to any desired depth, in which respect it possesses a decided advantage over the Harveyed plate. The back of the plate also becomes exceedingly tough, its tensile strength being much greater than that of the Harveyed plate, and plates made by the Krupp process possess remarkable immunity from cracking under numerous heavy impacts.

" Unquestionably the manufacture by the Krupp process is more difficult and attended with greater risk than of that of the Harvey process—requiring greater skill, knowledge, and experience—and there is no doubt whatever that the output of the factories will be considerably lessened if they manufacture Krupp instead of Harveyed armor."

Admiral O'Neil then proceeds to describe the tests made since 1895 with Krupp plates, including those made in October and November of last year at Indian Head under the direct supervision of the Navy Department. Continuing, he says:

#### Superiority of Armor Made by the Krupp Process.

" From what has already been said, from numerous tests other than those therein enumerated, and from the fact of its adoption for the latest vessels of leading maritime nations, it may be asserted without fear of contradiction that armor plates of 6 inches and upward, made by the new Krupp process, are superior to any others. As further evidence that such is the case, the following literal quotation is given from the published official 'Statement of the First Lord of the British Admiralty explanatory of the naval estimates for 1899 and 1900, presented to both Houses of Parliament:'

" 'The manufacture of armor has been effected by the fact that the introduction of a new and superior quality (meaning Krupp armor) has necessitated the reconstruction of plant, and involved many difficulties only to be overcome by experience. . . . All the manufacturing firms have been kept full of orders and urged to increase production, but the earnings of the present financial year will fall considerably below the sum provided in the estimates.'

" Under the head of battle ships, in the same document, appears the following with reference to four new ships of the 'Duncan' class:

" 'All armor will be of the latest and most improved quality (meaning Krupp armor), possessing much greater defensive powers in proportion to its thickness than armor used in the "Majestic" class.'

#### Why the United States Should be Supplied with Armor Made by the Krupp Process.

" It seems unnecessary to enter into any argument on this point, as probably no one will dispute the advisability and propriety of supplying our new vessels with the very best armor that can be made in this country. The United States cannot afford to build ships of war less efficient in any particular than those built abroad; still less can it afford to have a battle ship built for a foreign Government in a private shipyard in this country superior in any respect to a vessel built for this Government in the same shipyard, and yet such will be the case unless means are provided whereby the Department can procure armor of the best quality for the ships now under construction whose armor has not yet been contracted for.

#### Tests of Armor.

" The question has been asked whether the tests now applied to Harveyed armor are as severe as they should be, and the reply is that they are as severe as the manufacturers will consent to; and while they are not as severe as the best Harveyed plates will stand, they are such as secures to the Government probably as good a quality of armor as can be commercially manufactured by that process. It is certain that no group of Harveyed armor could successfully pass the ballistic tests now designated for Krupp armor; and the preceding remark as to the severity of tests of Harveyed armor will also apply to Krupp plates, as a reasonable factor of safety must be allowed; hence it may be said that the best Krupp plates would probably admit of a higher ballistic test than the one proposed.

" Were special plates made for ballistic test, as is the custom abroad, there is little doubt but that higher ballistic qualities could and would be guaranteed than is now the case; but in the United States the practice is to carry along together all the plates of a group, frequently upward of 20 in number, and amounting to

500 or 600 tons in weight, to a point where all have been carburized and face hardened, and then to select a plate from among the number for ballistic test, upon which the acceptance or rejection of the entire group, or its retreatment, will depend.

"As plates made by the Harvey process cannot be produced with exactness as to uniformity, it follows that a group will contain plates having different degrees of excellence, therefore the ballistic test must be such as will, within reasonable limits, admit of successful manufacture when the same is performed with the best practice. In fact, the ballistic requirements must be such as will allow for the probable and legitimate variation in the plates of a group, and the same will apply to Krupp armor; though with the latter greater uniformity may be expected, still there will be some variation.

"The tests now offered by the manufacturers for Krupp plates range from 1.30 times the velocity necessary to perforate plain steel plates of equal thickness as calculated by the De Marre formula, for plates of 12 inches in thickness, to 1.38 times the velocity thus calculated for plates of 4 inches in thickness.

"The test offered for Krupp plates is a velocity equal to about 95 per cent. of that calculated as being necessary for complete perforation.

"The energy that a 6-inch plate is required under present specifications to absorb is 3324 foot-tons, while that it will be required to absorb under the proposed specifications for Krupp armor is 7389 foot-tons.

"The energy that a 12-inch plate is required under present specifications to absorb is 15,972 foot-tons, while that it will be required to absorb under the proposed specifications for Krupp armor is 50,310 foot-tons.

"The Department has no doubt whatever as to the superiority of thick armor plates made by the Krupp process over those made by the Harvey process; otherwise would not recommend its adoption."

#### A Government Armor Plate Plant.

Concerning the advisability of the construction of a Government armor factory Admiral O'Neil says:

"The question of the establishment of a Government armor plant being a national measure of great importance may well be left to Congress.

"The report of the armor factory board, transmitted to Congress on December 6, 1897, contains a comprehensive report, with specifications and estimates for such an establishment. The board estimated that the cost of a plant having a capacity to manufacture 6000 tons per year of nickel steel face hardened and reforaged armor would be, exclusive of land for a site and of freight on building material, or expense for piling foundations, but including an open hearth department for the production of nickel steel ingots, \$3,747,912.11. Owing to the marked increase in the cost of structural material, especially of steel, since the date of the board's report, it is probable that such estimate should be increased not less than 30 per cent., bringing it up to \$4,872,285.74. The cost of a plant to produce Krupp armor would not materially differ from one to make Harveyed armor, as all the principal features are common to both; but the output of Krupp armor would undoubtedly be less than that of Harveyed armor—perhaps 5000 instead of 6000 tons.

"The Department does not feel called upon to discuss in this memorandum the advisability or otherwise of establishing a Government armor factory. All that the Department desires is that the building of armored ships for the Navy shall not be impeded by lack of armor of the best quality when it is required. In no case should a Government factory be regarded as a possible source of supply of armor for the 'Maine,' 'Ohio' and 'Missouri.'

#### Foreign Government Armor Works.

"The only Government armor factory of which the Department has any knowledge is the Russian plant at Kolpino, near St. Petersburg, known as the Tjora Iron Works; but from the fact that to-day Russia is purchasing armor for her naval vessels in the United States and in Europe, the inference is that the works above referred to cannot or do not meet the Government requirements.

"In France, at the naval establishment known as the Forges de la Chaussade, at Guerigny, near Nevers, deck armor is made, the greatest thickness being 4 inches. This establishment has no steel making plant, the ingots being purchased from private firms, and it cannot be classed as an armor factory in the generally understood sense of the term.

"Japan has established a plant which is not yet in operation, known as the Imperial Iron Foundry, at Yawatamura, in the province of Chickuzen, at which plates are to be made 6 inches thick, weighing up to about 6 tons. No doubt, if this proves successful, still heavier plates will in time be manufactured.

#### Private Armor Factories.

"From the best information obtainable the following is believed to be a correct list of all private armor works of any importance:

Great Britain:

Vickers Sons & Maxim, Sheffield, England.  
Sir John Brown & Co., Sheffield, England.  
Cammell, Sheffield, England.  
Beardmore, Glasgow, Scotland.

France:

Marrel Freres, a Rive de Gier.  
Schneider & Co., Le Creusot.  
La Compagnie de Chatillon-Commentry, Montlucon.  
La Compagnie Anonyme des Forges, Paris.  
La Compagnie des Hatus Fourneaux, St. Chamond.  
St. Etienne Steel Works, St. Etienne. (Deck armor only.)

Germany:

Fried. Krupp, Essen.  
Dilligen Works, Dilligen.  
Gruson Works, Buckau. (Armored turrets.)

Austria:

Witkowitz Iron Works, Witkowitz, Moravia.

Italy:

Terni Steel Works, Terni.

United States:

The Bethlehem Steel Company, South Bethlehem, Pa.  
The Carnegie Steel Company, Pittsburgh, Pa.

As to the amount of armor likely to be carried by new ships if Krupp armor is used, Admiral O'Neil says:

"The question has been asked whether vessels will carry a less quantity of Krupp armor, because of its superiority, than of Harveyed armor. The reply is that they will not.

"The general tendency is to decrease somewhat the weight of armored protection carried by vessels, not because of better armor, but because the demands for increased weight for coal, machinery, armament, and large supply of ammunition render it imperative. The object will be, as heretofore, to give the vessels as much weight of armor as their displacement and other weights to be carried will admit of, and the vessel, therefore, that carries the best armor will be the best protected, the weight of armor being the same.

"The vessels of the 'Indiana' class carry armor to the extent of 27 per cent. of their displacement; the 'Kearsarge' class, 25 per cent.; the 'Iowa' class, 23 per cent.; the 'Alabama' class, 22 per cent., and the 'Maine' class, 20 per cent. As an illustration of the relative amount of Harveyed or Krupp armor that would be necessary to give equal protection, and the relative cost, the following cases are cited:

"For the vessels of the 'Alabama' class Harveyed armor to the amount of 2529 tons has been contracted for, at a cost of \$411.20 per ton, costing \$1,039,924 for each vessel (assuming that the Government will ultimately pay the royalty of \$11.20 per ton, which it has agreed to do, under certain conditions).

"Were armor made by the Krupp process to be used for these vessels and an equal amount of protection retained, a reduction in weight could be made to the amount of 497 tons; that is, the vessels would each carry 2032 tons of armor instead of 2529 tons. This reduction would be made on the following basis:

"As now designed, each vessel carries 1747 tons of heavy armor (that is, of over 6 inches in thickness), which could be reduced 25 per cent. in weight (that is, in thickness) amounting to 437 tons; they each also carry 600 tons of light armor (that is, of 6 inches or less in thickness), which could be reduced 10 per cent. in weight, amounting to 60 tons; a total reduction of 497 tons, as above stated.

"Of the total amount thus required—namely, 2032 tons for each vessel (if Krupp armor were used)—182 tons would be Harveyed in any case, as it consists of very thin plates, such as turret tops and doors, sighting hoods, &c., which could not be advantageously made by the Krupp process.

"The amount required would therefore be:

1,850 tons Krupp, at \$545 per ton, costing.....	\$1,008,250
182 tons Harveyed, at \$411.20 per ton, costing.....	74,833

2,032 tons, costing.....	\$1,083,088
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"The above sum (\$1,083,088) is \$43,164 more than the present contract price for all Harveyed armor (namely, \$1,039,924).

"Thus it will appear that to retain the same amount of protection on the 'Alabama' class, by using Krupp instead of Harveyed armor, the increased cost would amount to \$43,164; but were it contemplated, as it should be, to give these vessels the best protection obtainable on the weight allotted for armor, the account would be:

2,347 tons Krupp, at \$545, costing.....	\$1,279,115
182 tons Harveyed, at \$411.20, costing.....	74,833

2,529 tons, costing.....	\$1,353,953
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or \$314,029 per vessel more than the present contract price for Harveyed armor (namely, \$1,039,924).

"It is not intended to show by the above that the use of Krupp armor is only a little more expensive than Harveyed; it is only so if the same protection is obtained. It is considerably greater if the best protection practicable is obtained."

#### Admiral O'Neill's Suggestions.

Admiral O'Neill closes this memorandum with the following suggestions to Congress:

"1. Enable the Department to procure the best quality of armor that can be made in the United States for battle ships 'Maine,' 'Ohio' and 'Missouri.'

"2. Make the necessary provision at an early date.

"3. Remove the restriction contained in the act of March 3, 1899, limiting the price of armor for the six armored vessels authorized by said act to \$300 per ton, including royalty.

"4. Remove the proviso contained in the act of March 3, 1899, which directs that none of the armored vessels authorized by said act shall be contracted for until the armor therefor is contracted for.

"In any case, the Department trusts that some final solution of the armor situation may be arrived at, in order that the building of armored vessels may be proceeded with, it being evident that until some settlement of this vexed question is reached no shipbuilding programme can be satisfactorily carried on."

In this connection the agitation of a Government armor factory has already begun in Congress, Congressman Underwood of Alabama having introduced the following bill:

"Be it enacted, &c., that the sum of \$4,000,000 be, and the same is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the erection of suitable buildings and the purchase of suitable machinery and other material necessary for the establishment and maintenance of a plant for furnishing armor plate for the use of the Navy.

"That the Secretary of the Navy is hereby authorized to appoint a board, to consist of three officers of the Navy, who shall examine and report what, in their opinion, is the most suitable site for the erection of the plant provided for in the foregoing section of this act, and no money shall be expended until the point so selected shall have been approved by the Secretary of the Navy.

"That the board so appointed shall report to the Secretary within three months after the passage of this act, and that the work on the erection of the manufacturing plant shall begin within six months after this act goes into effect and be continued with all due expedition until completion."

W. L. C.

#### Implement Manufacturers Oppose Increased Freight Rates.

The following argument against proposed changes in railroad classification and the consequent advance in freight rates has been submitted by the manufacturers of harvesting machines to J. F. Tucker, Commissioner of the Central Traffic Association, at Chicago:

Referring to comparative prices on raw material used in construction of harvesting machinery, as per circular attached, which were taken from a recent issue of *The Iron Age*, in connection with the proposed advance in classification, it will appear to you and the members of your association that in changing the classification at this time the points involved have not been sufficiently considered.

With an increase approximating 100 per cent. on a great portion of the material used, and a greater increase on other material, also used, it is certain that unless a corresponding increase is made on the manufactured product the difference must represent an actual loss to the manufacturer.

The possibility of recouping in this way is out of the question, because the farmer, receiving not more, if as much, for his grain as last year, will not have the means at hand. Practically all contracts for machine sales for 1900 delivery have been closed at prices agreed on before action by the official Classification Committee advancing rates was made public. It follows then that the manufacturer is obliged to absorb from his profits a large share of his legitimate earnings. Not only has he the increase in material prices to contend with, but also advances in cost of production by reason of increase in price of labor.

On the other hand, our railroad friends are enjoying a large and remunerative business from bountiful harvests, an increased tonnage and from advanced rates on raw material and farm products. The necessity for greater earnings does not appear urgent as compared with the necessity for the profitable operation of an in-

dustry so largely contributing to the revenue of transportation agencies.

The makers of harvesting machinery for four consecutive years endured in the extreme the severe financial and industrial depression prevailing and until the last and present seasons operated at an actual loss. Just as prospects began to look brighter the present conditions of the raw material market developed, and now the advances advertised in classification to take effect January 1, 1900, threaten the return of unremunerative operation which it was hoped would not recur.

The third-class rating on L. C. L. shipments has continued in the official classification for many years. It is reasonable and should remain. In the meantime the prices of harvesting machinery have been going downward. The tonnage has greatly enlarged, and the mode of packing has improved so that the freight is easily handled and the liability to damage in transit is reduced to the minimum. It is granted that there may be some reason for the restoration of the carload classification to fifth class, but no such admission can be allowed in the prospective advance in L. C. L. classification from third class to second class.

The export trade in harvesting machinery has developed favorably under the sixth-class rating, effective since February 22, 1899, and the withdrawal of this rating cannot but prove reactionary. Freight under this heading requires complete inclosure and the lumber used in packing for sea transportation is equal to 20 or 25 per cent. of the weight of the woods shipped. Foreign competition grows more acute each succeeding year by reason of questionable practices of foreigners in copying American wares. Their raw material markets not being governed as ours are to a great extent by trusts, their cheaper labor market and their proximity to the consumer, are grounds worthy of consideration by your association in the discussion of fifth-class rating on harvesting machinery for export.

In closing it might be considered in order to remark that nearly every harvesting machine contributes doubly in the matter of freight charges. The method of shipment is in carloads to the various branches or distributing depots and reshipment L. C. L. to final destination. Do our railroad friends knowingly put a double burden on our industry, or has this point been overlooked?

Regarding the matter from every standpoint one outlook only is visible: A great increase in cost of production and distribution will diminish this output, which means a loss to all the agencies involved. The farming community will get along without so many machines, eking out with old ones or by use of their neighbors' facilities. Manufacturers will suffer from insufficient business. A loss will entail on railroads from decreased earnings and ultimately on makers of raw materials from whom have emanated the policies now prevailing.

**The Duty on Boiler Plate Shearings.**—On November 29 O. L. Spaulding, assistant secretary, rendered the following decision: The Department is in receipt of your two letters of the 21st inst., reporting upon the communications of La Belle Iron Works and the Wheeling Steel & Iron Company, under date of the 1st and 2d inst., respectively, concerning the classification of certain so-called steel boiler plate shearings. It appears that the merchandise is classified as "scrap steel," dutiable at \$4 per ton under paragraph 122 of the act of July 24, 1897, "in harmony with" the decision of the Board of General Appraisers, dated June 2, 1891 (T. D. 11,356; G. A. 639), in which it was held that the particular "steel boiler plate shearings" in that case were subject to duty as "scrap steel" under the corresponding paragraph, No. 134, of the act of October 1, 1890, and in which the decision of the collector of customs, in assessing duty thereon at five-tenths of a cent per pound under the provisions of paragraph 138 of said act, was accordingly overruled. The appraiser reports that considerable quantities of similar goods have been imported at your port since the date of the above mentioned decision, and that during the last year importations thereof amounted to "several hundred tons." Upon an examination of said ruling it is manifest that the decision of the Board was based upon the finding of fact that the merchandise in that case was "waste or refuse steel, fit only to be remanufactured," and had "no commercial value for any other purpose." The Department is in receipt of information to the effect that large quantities of so-called steel boiler plate shearings have been imported at your port, cut to specified dimensions, which have been purchased at rates much higher than the prices quoted for scrap iron or steel, and are used in this country as billets, for the production of sheets or plates of superior quality. In view of the foregoing, you are hereby instructed to assess duty on future importations of the above description in accordance with the provisions for "steel in all forms and shapes not specially provided for" in paragraph 135 of the act of July 24, 1897.

## Central Pennsylvania News.

HARRISBURG, December 18, 1899.—There will be few industrial plants in this district which will cease operations at Christmastide for more than a single day. The closing rush of a busy year makes it impossible to shut down for more than a day. As a rule, labor of all kinds in this territory is contented. Occasionally there are whispers of dissatisfaction because the wages of 1892 have not been fully restored, but there is no general complaint. It is intimated that there may be some further advance in wages at certain mills and factories after the first quarter of the new year. It has been for many of these companies a money making period, and there is a disposition to share the profits with the wage earners. The last six months, however, have not been entirely satisfactory to all the steel and iron makers; a few have experienced the strange anomaly of the finished products—owing to high prices of raw material—representing less than the raw material consumed therein. But, taking all in all, there has been, through adjustments and the usual harmonizing of things, a fairly satisfactory smoothing out of the difficulties of an engulfing wave of prosperity. It came with such a tremendous sweep that it was quite natural that there should be embarrassments in certain quarters by reason of unpreparedness. With the opening of the new year the iron and steel manufacturers of the Central Pennsylvania district will be in better shape for straight out and out business.

At the Lalance & Grosjean Mfg. Company's mills there has been no change during the week, excepting, perhaps, the firing of a new bar mill furnace, which has a much larger capacity than the old one recently dismantled. Coal is coming in in small quantities, enough to keep the mills in operation, but with little prospect of accumulating a stock such as ought to be on the ground at this season of the year. A good supply of steel bars and billets is on the bank, and orders are on hand sufficient to keep the mills working steadily, with but the usual midwinter suspension for stock taking.

The Central Iron & Steel Company closed their year's business October 31, and with their 88-inch mill off for three months rebuilding. Their output was 118,556 tons of plates, tank plates, and universal plates. They have now added the new mill, and also two new furnaces at their No 1. mill, so that they now have a capacity of 12,000 to 14,000 tons of plates per month. Their product is plates exclusively, and the works are being run night and day. They now have plants covering all sizes of plates wanted, both in sheared and universal—viz., large 48-inch universal mill, large 126-inch plate mill, medium 88-inch plate mill, and small 72-inch plate mill.

Frank Tenney, assistant to the president, says that the Pennsylvania Steel Works are being run to their utmost capacity. Every department of the great plant was in full operation during the last week, the output being very heavy. These departments are gradually catching up with delayed orders, caused by coal shortage and the ear famine. The pay of the men for November approximated \$250,000.

The Chesapeake nail works have been running right along, and James B. Bailey, the general manager, says business is steady and good.

The entire foundry equipment of the Harrisburg Foundry & Machine Works has just been moved to the new plant, where 125 men are now employed, the old foundry being abandoned on account of the better facilities of the new. The company are now employing about 450 men, which, in comparison with a year ago, is nearly double the force. President W. R. Fleming said to-day: "We are just erecting and about starting an engine of 1000 horse-power maximum capacity of the new Harrisburg Corliss steam accelerating cut off type, self lubricating, for the Harrisburg Light, Heat & Power Company. We also started, last week, another engine of the same size and type for the Haverhill Electric Light Company, at Haverhill, Mass. The demand for our machinery seems to be holding up to about the maximum, our great difficulty being that, owing to previous orders taken, we cannot deliver on as short time as some other concerns who are manufacturing a less improved type of machinery. The element of quick delivery is a strong one, and we are compelled to turn down contracts because of our books being so filled with orders."

The Harrisburg Rolling Mill Company are quite busy, and expect to be until the end of the month. The company make skelp iron for the American Tube & Iron Company's mills at Middletown, and the general trade.

The Harrisburg Pipe Bending Company, about to be incorporated as the Harrisburg Pipe & Pipe Bending Company, with enlarged capital, have planned for an extensive enlargement of the present plant, with an office building. They are one of the most successful concerns in this district.

The new pipe mill at Columbia will be built, at a cost of \$750,000, as rapidly as possible.

## THE WEEK.

It is said that the plan for a consolidation in the strawboard manufacturing industry has been laid aside for the present on account of the recent decision in the Addystone pipe case.

Five striking members of the Metal Workers' Union were sentenced to imprisonment for 4 to 14 days each, on the 13th inst., at Chicago, by a local judge for violating an injunction by attacking non-union laborers. The injunction had been issued November 20, on application of the Winslow Bros.' Company, manufacturers of architectural iron work. An appeal was taken in each case to the Appellate Court.

The United States Department of Agriculture has advanced its estimate of the wheat crop of 1899 about 6 per cent. Upon the reports made from the various wheat districts of the country on December 1, the Department makes a preliminary estimate of this year's wheat crop at 547,300,000 bushels, as against a crop of 675,000,000 bushels last year.

The activity of trade and its effect upon the transportation interests of the country are reflected with great distinctness in the returns of railroad earnings for the month of November. According to the statements received from roads aggregating a mileage of 103,063, the gain in gross earnings over November, 1895, was \$5,923,048, or 10.48 per cent., despite the fact that shipments of cotton were 700,000 bales smaller than last year, and there was a decrease of over 23,000,000 bushels in the deliveries of grain at the Western primary markets, not to mention smaller live stock deliveries in the same part of the country.

The Executive Committee in charge of the arrangements for the proposed national anti-trust conference have issued an address calling the conference to meet in Chicago on February 12 next, the anniversary of the birth of Abraham Lincoln.

An advance of 10 per cent. in wages went into effect in many of the New England cotton manufacturing centers on Monday, affecting between 70,000 and 75,000 operatives. Some of the woolen mill owners also increased the wages of their hands by 10 per cent. this week. These were outside the American Woolen Company, who will make a general advance on January 1.

The Venezuelan Consul-General in New York City has received an official dispatch from his Government announcing the lifting of the blockade which had been declared at all ports of Venezuela, owing to the capture two weeks ago by the rebels of the port of Maracaibo. The city was recaptured by the Government forces this week and the revolution is declared to be at an end.

A company with an authorized capital of \$350,000 have been incorporated in New Jersey under the title of the Solar Motor Company, "to manufacture Solar heaters, engines, &c.," to operate by utilizing the heat of the sun's rays. Aubrey G. Eneas, Charles L. Haskell and Kenneth K. McClaren are the incorporators named.

Vesuvius, a butte which rose some 500 feet above Beaver Creek, near Cameron, in the Cripple Creek district of Colorado, was destroyed on Monday by one of the biggest blasts ever undertaken. The Pike's Peak Power Company found the butte in the way of a dam under construction. Accordingly a tunnel 100 feet long was run into the bluff and loaded with 30,000 pounds of dynamite. The resulting upheaval provided the company with 4000 cubic feet of rock, which will be used in building the dam.

Daniel J. O'Callaghan, a New York attorney, has filed with the Attorney-General of the United States charges alleging that an agreement in violation of the anti-trust law exists between the General Electric and the Westinghouse Electric Companies. He asks that an action be instituted in New York against the two companies. The charges allege that a board of control of representatives of the two concerns exists for regulation of prices. Attorney-General Griggs has reserved his decision in the matter.

**No Advance in Ore Rates.**—It has practically been decided by the ore carrying roads that to secure any advance in ore rates for the coming season is practically impossible, in view of the fact that the Pittsburgh, Bessemer & Lake Erie Railroad (the Carnegie road) declines to become a party to any agreement looking to an advance in rates. The Bessemer road is not a member of any freight association, and has been making rates to suit its own requirements. It was proposed to advance the ore rate from Cleveland to the valleys about 15 cents, and to Pittsburgh about 25 cents. It is not likely, however, that the advance will be made.

# The Iron Age

New York, Thursday, December 21, 1899.

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GEO. W. COPE,	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	HARDWARE EDITOR.
JOHN S. KING,	BUSINESS MANAGER.

## Gold Exports and the End of Silverism.

The two financial events of interest within the past week are the export of gold and the House's passing of the bill establishing the single gold standard and providing for a moderate increase in the possible national bank circulation. The export of gold would cause no uneasiness at all if the money market were not now, and had not been for months, in a condition of stringency. There is a very large amount of gold in the country; the greater part of the customs revenue is now paid to the Treasury in gold; there are no fears of the depletion of the gold reserve or of silver payments; the integrity of the currency is not involved, and the course of trade is still extremely favorable to us. The gold that has gone abroad is not to pay our debts; it is practically a loan made to London, where financial, and still more military, conditions create a special need for a large stock of gold.

But the money market is tight and traders would rather have seen gold come this way than go to Europe. The amount shipped, however, is comparatively small, and the amount likely to be shipped is not very great in comparison with the supply of money and the replenishment which this market has received or is likely to receive. The amount exported on Saturday last was under \$2,500,000. The amount released by the Treasury by the purchase of bonds is nearly ten times this and the amount offered by the Treasury in anticipating interest payments is more than ten times this. Besides money is coming back from the West and South. This return current has been expected for weeks. After making an allowance for increased need of currency in the West and South, it is quite certain that the greater part of the funds withdrawn from here by the banks of the West and South will return here, and probably very soon. A good part of the decline in stocks is the natural and inevitable reaction of the speculative movement which has marked the whole of the year. One of these reactions came late in the winter, another late in the summer and a third is now experienced. Speculative advances in prices cannot be continued indefinitely and if not checked by the rates for money would be checked more seriously. Financiers assure the business community that there is plenty of money here at rates not unreasonably high for all legitimate business. At any rate, the export of gold has had little to do with the condition of the market.

The currency bill passed by the House on Monday would permit an increase of about \$25,000,000 in the circulation of the national banks. It marks the beginning of the end of the cheap money agitation which has hampered business and discredited the nation at intervals for a quarter of a century, and which in 1893 brought on a disastrous panic. It is not doubted that the Senate will concur with the House in declaring the gold dollar to be the single unit of the measure of values, and this will remove the danger which exists so long as two very unequal units of value are recognized by law. For some time past there has been little real danger that a free coinage bill would be passed, but there has

been danger that weakness or inaction by a national administration might lead to a repetition on a more disastrous scale of the events of 1893.

The Senate has a currency bill of its own and it will not agree to the House bill without a change, but it is certain now that the year 1900 will see the agitation for a cheaper dollar, a debasement of the monetary unit, which began in 1875, ended by legislation eliminating the obsolete but threatening silver standard. There have been a great many curious notions about money, but the notion that money ought to be reduced in value so that it should buy very little never found a lodgment in the minds of men who work for wages or sell the products of the soil, as well as those of men of some business knowledge, except in the United States and in the last quarter of the nineteenth century.

## Labor Organizations

Extreme views are held concerning organizations of workingmen. Here is the *Farm Implement News* of Chicago, for instance, which winds up an editorial on "trust" legislation with the query, "But why should we attack organized capital while leaving organized labor to forcibly and brutally crush out competition, restrain industry and trade, and put up prices?" On the other side appears an interview with Henry T. Buffington, special agent of the national Department of Labor, who has recently been conducting some investigations of strikes and labor troubles at Chicago for the Department's annual report. He says that a marked decrease is observed in the number of strikes and lockouts in the past five years, as compared with previous similar periods, and attributes the improvement largely to the increased intelligence of labor organizations and the better mutual understanding between organized labor and organized capital. The position which the *News* takes is that also taken by interests that have suffered from special occurrences, as for instance the peculiar developments in the Chicago building trades, in which working hours have not only been cut down, but the quantity of work that each man shall perform in a working day has been restricted by union regulations. Employers have been harassed in other localities and in other lines of business by regulations of a similarly vexatious character, causing much antagonism to labor organizations in general. The position taken by Mr. Buffington is supported by those employers of labor who have on the one hand endeavored to maintain friendly relations with their employees by recognizing the proper or legitimate functions of trades unions, while, on the other hand, they have been sufficiently firm and withal shrewd in their management of labor questions to see that their own interests are not injured by conceding everything demanded.

The day will never dawn in this country, so long as representative government continues, when restrictive legislation will be enacted against labor organizations. Powerful influences will always operate to prevent anything of the kind being attempted by any considerable body of national or State law makers. The relationship existing between employers and employed will not be regulated by statute, but will of necessity be left to the good sense and fair dealing of both sides. Unscrupulous employers may of course be found who will attempt to grind the faces of those who work for them, and labor leaders may be too grasping in endeavoring to get special privileges and terms, but neither of them will be controlled by statute. The unsuccessful efforts to establish compulsory arbitration have demonstrated that fact. State arbitration boards exert a little moral pressure

on the disputants, but they have not the power to actually settle a controversy.

The decrease in strikes and lockouts noted by Mr. Buffington we would not credit in any degree to the increased intelligence of labor organizations. The labor of this country has always been exceptionally intelligent, and the labor leaders of ten years back were in no way inferior in ability or attainments to those of the present. But labor organizations have grown in power very considerably in recent years. Their influence has correspondingly increased, and their wishes are more generally respected than was formerly the case. Consequently, many concessions are now being granted by employers which would have been peremptorily refused not long since. They have felt powerless when they fully realized the new conditions confronting them. Of course, the greater prosperity latterly enjoyed has made employers less inclined to enter upon a controversy which would stop operations and cut off all benefit from the improvement in business. Therefore they have yielded, in many instances against their judgment, relegating disputes with their workmen to the future.

But another influence which will lessen strikes and lockouts very decidedly is now developing. This is the defense associations of employers. The plan is not new, but it has hitherto been operative only in certain industries and has therefore been of limited extent. The good effects having been observed, other branches of manufacturing are adopting the idea. Labor organizations are not fought but are recognized, and amicable relations are established for the purpose of settling all questions by peaceful means. Ere long employers' defense associations will probably be numerous, and in manufacturing lines at least the number of strikes and lockouts will be greatly diminished. When labor organizations are confronted by equally powerful employers' organizations, a speedy settlement is usually assured.

#### Business and Stock Speculation.

In the metal trades stock speculation has not until recently possessed much significance. It is true that for many years the fluctuations in the Western market for copper mining shares often foreshadowed the position of that industry and occasionally served to give useful hints to the buyers of that important raw material. But in other branches the public companies were so few in number that the movements of their stocks did not reflect and much less influence the course of events. That has now been changed to a considerable extent, since the modern consolidations, whose stocks are actively dealt in, represent very large producing interests, and since a large number of individual properties are in the lists.

It has been said with much show of justice that during the present boom in the iron trade there has been less of speculation in iron products than at any previous period of rushing prices. This, it has been explained, is due to the fact that the more venturesome have preferred to operate in the industrial securities representing well-known properties. The reported enormous earnings of the steel stocks have encouraged such speculation. The result has been that the trade, as a whole, is in much closer touch with Wall street than it has ever been and that it is more affected by happenings there like those of the past week.

It would be idle to deny that such is the fact, and yet we are inclined to believe that the influence of Wall street upon the iron and metal trades is often overrated. The effect of such wholesale liquidation of speculative

accounts as took place during the past week is indirect and to some extent wholesome. To begin with, it will make practically impossible what has been increasingly difficult for some months, to float any additional consolidations on the basis on which some have been offered to the public. It is quite evident that undertakings based on the closest valuations only can look for any support whatever from bankers or investors. From the point of view of those who regard the movement toward the consolidation of manufacturing interests as a development toward economic progress the check imposed by recent events is salutary.

There is another aspect, however, which is more serious and far reaching. It is true that the money stringency which has brought about the downfall of speculators has not at all affected what might be called legitimate business. It is true that manufacturers and merchants have been able to secure at reasonable rates all the money they required, through the ordinary channels. It is certainly true that the great masses of the people are enjoying better earnings than ever before. Our farmers are prosperous, our laborers and mechanics are fully employed at good wages, our railroads are crowded with business and are piling up large net earnings, and our manufacturers have orders on hand for a long time to come. While these facts are self evident, it must be acknowledged that a chill to enterprise, even though it at first affects those only whom many regard as reckless, will tell to some extent. It does influence sentiment, that intangible but influential factor in business.

The general situation is so strong from every aspect that there need be no fear whatever of a spread of a panicky feeling in merchandise, but we may expect business men throughout the country to move with more caution, and we may witness a return to a sounder basis of values, far more remunerative and lasting than that prevailing recently.

#### OBITUARY.

##### WALTER SHANLEY.

Walter Shanley, one of the oldest and best known of Canadian engineers, died December 17 at the St. Lawrence Hall, Montreal, at the age of 81 years. He constructed the Hoosac Mountain tunnel and was closely associated with the development of the St. Lawrence Canal system and a number of other important engineering works.

##### F. A. STRASSER.

The death is reported of F. A. Strasser, head of the machinery firm of Strasser, Mingledorff & Co. of Savannah, Ga.

##### COL. JULIUS W. ADAMS.

Col. Julius Walker Adams, one of the foremost railway and bridge engineers of the century, died on December 13, at his home in Brooklyn, N. Y., at the advanced age of 87 years. He was born in Boston, Mass., and received his early education in that city. He was appointed to the Military Academy at West Point, but left it before graduation to follow his chosen profession of engineering. From 1832 to 1844 he served on the engineering staff of various railroads in the East and West and was also connected with the United States service as chief engineer in the survey of harbors and lighthouses. Later he was the resident engineer of the United States dry docks of Brooklyn, and engineer for the Boston Water Works. For three years from October, 1846, he was the superintending engineer of the New York & Erie Railway. During the next several years he was the consulting engineer of the city of New York, editor of *Appleton's Magazine*, author of the "Dictionary of Engineering" and many scientific treatises. He laid out the sewerage and drainage systems of the city of Brooklyn from 1857 to 1860, and was Colonel of Engineers of the Second Division of the New York State Militia. He also acted as chief engineer of the New Haven water works. He was commissioned colonel of

the First Regiment of the Long Island Volunteers in June, 1861, and served under General McClellan in the Army of the Potomac. He was appointed colonel of the Second Hawkins Zouaves in November, 1862. Colonel Adams was employed in various capacities as chief and consulting engineer on many of the important railroads of the United States from that time forward. From 1881 to 1882 he was editor of the *Engineering News*. He was the last of the twelve original founders of the American Society of Civil Engineers, and was a member of the New York Academy of Science, and also of the Association for the Advancement of Science.

## JAMES W. REIS.

James W. Reis, general manager of the National Steel Company, died on December 17 at his home in New Castle, Pa., from typhoid fever, at the age of 35 years. He was a brother of William E. Reis, president of the National Steel Company, and was regarded as one of the foremost among the younger generation of iron manufacturers of this country.

## ALEXANDER M. BYERS, JR.

Alexander M. Byers, Jr., vice-president and secretary of the iron firm of A. M. Byers & Co., Pittsburgh, Pa., died December 16, at the home of his father in Allegheny, Pa., from an attack of typhoid fever. He was the eldest son of Alexander M. Byers, and was only 27 years of age. He was born in Allegheny and graduated from Yale University in the class of '94. Immediately thereafter he entered upon a business career in his father's firm, and in the brief period of five years had won for himself distinction in the business world. Mr. Byers was a director of the Iron City National Bank.

## THEODORE C. WALLACE.

Theodore C. Wallace was born in New York City December 18, 1842. He entered the iron and steel trade May 8, 1858, as clerk for Smith, Hegeman & Co., the firm being composed of Gamaliel G. Smith, George R. Hegeman and Edward F. Hopkins. He went to the war in April, 1861, until August, 1861, with the Seventy-first Regiment, resuming his position upon return of the regiment. He continued with the same house and its successors to November 1, 1890. A few years after the war broke out E. F. Hopkins left Smith & Hegeman to form the firm of Holden, Hopkins & Stokes. Hegeman died soon after this, and on March 2, 1868, the firm of Smith, Sturges & Co. were formed, composed of Gamaliel G. Smith, Theodore Sturges, Charles W. Ogden and Theodore C. Wallace. On January 1, 1871, Mr. Sturges retired and the firm of Gamaliel G. Smith & Co. were formed, composed of G. G. Smith, C. W. Ogden and T. C. Wallace. On January 1, 1875, Mr. Smith retired and the firm of Ogden & Wallace were formed, composed of Chas. W. Ogden and Theodore C. Wallace, and so continued until December 31, 1894. On January 1, 1895, Mr. Ogden withdrew on account of ill health and a new firm were formed under name of Ogden & Wallace, composed of Theodore C. Wallace, John B. Carss and John H. Palmer as general partners, and Chas. W. Ogden, Jr., as special partner. This firm continued until November 1, 1899, when ill health obliged Mr. Wallace to withdraw.

## C. S. SHIVVERS.

C. S. Shivvers, one of the assistants of Geo. A. Baird, general sales agent Republic Iron & Steel Company, Chicago, died Tuesday morning of pneumonia. Mr. Shivvers was formerly connected with Jones & Laughlin of Chicago, afterward with the Sylvan Steel Works, Moline, and returned to Chicago when the Sylvan Works were merged into the Republic. He was 46 years old.

## J. S. CUNNINGHAM.

J. S. Cunningham, head of the Cunningham-Jenkins Company, iron founders, of Irwin, Pa., died on December 18, from the effects of a paralytic stroke, aged 77 years.

**Great Rod Rolling Records.** — Some wonderful records for rod rolling were made recently at the Rankin works of the American Steel & Wire Company, Rankin, Pa. The day turn on December 8 turned out 440,760 pounds, the night turn following 480,500 pounds, or a total of 921,260 pounds, equal to 411 gross tons of No. 5 rods. On the day following, December 9, the day turn made 508,600 pounds, equal to 225 gross tons. These records, for three consecutive turns in rod rolling, have probably never been equaled.

On December 22 a number of experts are to discuss automobiles before the Electrical Section of the Franklin Institute, Philadelphia.

## American Steel &amp; Wire Company on Neville Island.

We have official advices that the American Steel & Wire Company of Pittsburgh, through the recently organized American Land Company, have bought 356 acres of land on Neville Island, just below Pittsburgh and lying between the tracks of the Pennsylvania Company West and the Pittsburgh & Lake Erie Railroad. Neville Island is about 7 miles in length, and the land secured by the American Steel & Wire Company is located at the upper end and also at the lower end of the island, while they have also bought a number of intervening tracts. Negotiations for the purchase of this land have been going on for some months, and in addition to that already bought, options have been secured on additional tracts, which when closed up will add very materially to the present holdings. It is the intention of the American Steel & Wire Company to concentrate the works in the Pittsburgh district on Neville Island, with the possible exception of the Rankin Works at Rankin, Pa., and the Braddock Works, at Braddock, Pa. The plants which will probably eventually be removed to Neville Island, and very much enlarged, embrace the Shoenberger Steel Company blast furnaces, Bessemer plant and horse shoe works, at Fifteenth and Etna streets, Pittsburgh; the Bessemer plant at Twenty-sixth street and Allegheny Valley Railway; the rod mill, wire and wire nail mill of the Oliver Wire Company, on the South Side; the Beaver Falls rod mill and wire nail plant at Beaver Falls, Pa., and Edith Furnace in lower Allegheny. In time it is believed all these plants will be dismantled and taken to the new site on Neville Island. Very much larger works will be built, and already the American Steel & Wire Company have commenced the erection of one blast furnace, which will have a daily capacity of 600 tons. Ground has been laid out for a total of six, but it has not as yet been fully decided that this number will be built. It is a tremendous undertaking, and plans have not been fully defined. A company to be known as the Pittsburgh & Ohio Valley Railway Company have been organized and will build a belt line around the island, from which bridges will be built giving connection to the tracks of the Pennsylvania lines east and west of Pittsburgh, and also to the Pittsburgh & Lake Erie Railroad. A new Government dam is under construction at Glenfield, a short distance below the possessions of the American Steel & Wire Company, and this will insure a navigable stage of water the year around. Coal and coke from coal mines and coke plants owned by the American Steel & Wire Company will be brought down by barge at a very low cost of freight. Other plans are under consideration, which when carried out will give the American Steel & Wire Company a very large plant for the manufacture of rods, wire and wire nails from the pig iron to the finished product. It is realized that the lowest minimum cost in manufacture can only be reached by concentration of works, and it is the intention of the American Steel & Wire Company to secure the lowest possible cost by concentrating their plants on Neville Island. The blast furnace on which work has already been started is being built by the Riter-Conley Mfg. Company of Pittsburgh, and will have a daily capacity of at least 600 tons. Julian Kennedy, the well-known engineer, of Pittsburgh, is consulting engineer for the company in the development of their plans for the utilization of their Neville Island property.

A contract for the construction of four new freight and passenger vessels for the Morgan Line has been awarded to the Newport News Shipbuilding & Dry Dock Company. The total cost is to be \$2,400,000.

A dispatch from Stroudsburg, Pa., says that after many years' idleness the Belvidere iron mines, near that town, have been purchased by the Empire Iron & Steel Company, who will at once resume work with a large force of men.

## PERSONAL.

E. M. Byers, Jr., of A. M. Byers & Co., Incorporated, makers of tubular goods, of Pittsburgh, who has been very ill for some weeks, is convalescing.

Lord Armstrong, the famous British ordnance manufacturer, has just entered on his ninetieth year. He is still engaged in scientific pursuits.

A. M. Greene, Jr., of the staff of the Mechanical Engineering Department of the University of Pennsylvania, who has had charge of the mechanical installation at the National Export Exposition, has completed his work there.

The Iron and Steel Department of the Colorado Fuel & Iron Company will hereafter consist of the works at Bessemer and all of the iron mines and stone quarries of the company. C. R. Robinson has been appointed general superintendent of the entire Iron and Steel Department, and has just announced the appointment of J. B. McKennan, for some time assistant general superintendent, as general superintendent of the works at Bessemer, and of R. H. Lee as assistant general superintendent. Mr. Lee was formerly with the Logan Iron & Steel Company at Lewistown, Pa.

Edward B. Craig, who has been treasurer of the State of Tennessee, has been elected treasurer of the Virginia Iron, Coal & Coke Company.

C. H. Dickerman has resigned his position as district manager of the American Car & Foundry Company, at Milton, Pa., and C. L. Rogers has been appointed his successor. William C. Dickerman has been appointed assistant district manager at Milton.

The Fort Pitt Gas Company of Pittsburgh have applied for a charter with a capital of \$2,500,000. The company merges six natural gas companies operating in the Beaver and Ohio valleys, and will construct a pipe line from Wetzel and Tyler counties, West Virginia. The companies merged are the Fort Pitt Natural Gas Company, the Rochester Light & Power Company, the New Castle Gas Company, the Independent Natural Gas Company and the Ohio Valley Gas Company. The Fort Pitt Gas Company had already absorbed the Bridgewater Natural Gas Company. The headquarters will be in the Vandergrift Building, Pittsburgh.

Clarence Holloway, representing the Ingersoll-Sergeant Drill Company in Australia, has returned to New York on a visit.

Edgar W. Zinsmaster, formerly of the Duquesne Mfg. Company, Pittsburgh, Pa., has severed his connection with that concern, to accept the position of general sales agent for the Merchants' Wire & Nail Company, with headquarters in the Laclede Building, St. Louis, Mo. This concern have recently secured control of the plant of the Continental Wire Company, at Granite City, Ill., and will manufacture wire nails, plain wire and barb wire.

J. A. Pannabaker has been appointed purchasing agent for Shelby Steel Tube Company, Cleveland, Ohio, to succeed Howard D. Seltzer, resigned.

Joseph A. Durfee has been appointed superintendent of the open hearth department of the Otis Steel Company, at Cleveland, succeeding J. B. Sheldon, who resigned. Mr. Durfee is succeeded as chemist of the company by Arthur W. Taylor, heretofore his assistant.

Hugh L. Thompson, of Waterbury, Conn., consulting engineer, is now engaged in that capacity in connection with the new brass rolling mill being built by the Waterbury Mfg. Company.

L. B. Ball, for several years secretary of the Buhl Malleable Company at Detroit, has disposed of his interest in that company and has located at Northville, Mich. (a suburb of Detroit), as sales agent for manufacturers and in the commercial brokers' line, under the name of the L. B. Ball Commercial Company.

J. H. Rogers, president of the North Queensland Galvanized Iron Company, of Townsville, Queensland, Australia, who was the delegate of the Townsville Chamber of Commerce to the recent International Commercial Congress in Philadelphia, is spending several weeks visiting the principal cities and manufacturing centers of the United States before returning to Australia.

Charles A. Plamondon, vice-president of the Plamondon Mfg. Company, makers of power transmission machinery in Chicago, has been elected president of the Illinois Manufacturers' Association.

John Stevenson, Jr., of New Castle, Pa., has purchased a very large block of stock in the recently organized Sharon Steel Company, who are putting up a blast

furnace, open hearth plant and rod mill, at Sharon. Mr. Stevenson will be actively identified with the new concern.

John W. Galvin, superintendent of the open-hearth department of the Illinois Steel Company, has resigned to accept the management of the new plant of the Peru Steel Casting Company, at Peru, Ind.

## The American Brass Company.

In previous issues we have reported the formation of the American Brass Company, and have also related the fact that the Coe Brass Mfg. Company of Torrington and Ansonia, Conn., the Ansonia Brass & Copper Company of Ansonia and the Waterbury Brass Company of Waterbury, Conn., were to be amalgamated. We are now officially informed that the latter consolidation has been effected and that the allied interests have secured the charter of the American Brass Company. The new company are capitalized at \$6,000,000. Charles F. Brooker of the Coe Brass Mfg. Company will be president of the new American Brass Company, A. A. Cowles of the Ansonia Brass & Copper Company will be first vice-president, J. S. Elton of the Waterbury Brass Company second vice-president and John P. Elton of the Waterbury Brass Company secretary and treasurer. The company will begin operating on January 1. The charter provides that the main office of the company will be located at Waterbury, Conn. It will be necessary to maintain this office simply to hold the regular meetings of the officers and directors. Whether or not a central business office will be located at this point has not as yet been decided.

It is reported that the new company will soon be augmented by the addition of the largest brass manufacturing plant located in Waterbury.

The annual meeting of the stockholders of the American Tin Plate Company will be held at East Orange, N. J., on January 16, "for the purpose of electing a class of directors, three in number, to serve five years, and for the transaction of such other business as may properly come before the meeting," part of this business being the reception and consideration of the annual report.

Representative Lovering of Massachusetts has introduced a constitutional amendment giving Congress authority to enact a law establishing uniform hours of labor, on the ground that the hours of labor are shorter in Massachusetts than in the South, and that they cannot be lengthened in Massachusetts on account of the extent of the labor vote.

At Washington, D. C., last week a bill was introduced in Congress by Representative John Dalzell, of Pittsburgh, to allow the construction of a bridge across the Monongahela River from the Carrie furnaces at Rankin to the Homestead Steel Works. The bridge is to be used by the Carnegie Steel Company in taking hot metal from the Carrie furnaces to the Homestead Steel Works. The Secretary of War has granted a permit to the Carnegie Steel Company to erect a masonry intake, within the harbor lines, at the Carrie furnaces at Rankin. Permission is also given to erect a cofferdam, outside the harbor lines, to be removed within six months. The river will be dredged to a depth of 10 feet at pool stage for the intake.

The Crown Steel Company have been organized with a capital of \$1,000,000 to make a specialty of the manufacture of tool steel by improved processes. The company are considering several offers of location for their plant, but are holding the matter open till the beginning of next year. H. C. Balcom, treasurer of the British-American Bond Company, 55 Broadway, New York, is interested.

Much interest is taken in Texas in the reported investigation of the Llano magnetic ore deposits by representatives of capitalists who propose to develop them.

The Republic Coke Company of Pittsburgh will make application for a charter of incorporation on January 2. The applicants are Thomas A. Noble, Edward T. Hays, Alexander Neper and Selwyn M. Taylor.

The strike of the iron molders at Racine, Wis., has been settled through the good offices of the National Founders' Association. Wages of floor molders are to be \$2.75 per day and bench molders \$2.50. Piece work molders are to have an equitable advance. An agreement has been signed to be in force until November 30, 1900.

## MANUFACTURING.

## Iron and Steel.

Frequent statements have been published in the Pittsburgh papers to the effect that it is the intention of the American Tin Plate Company to dismantle or move the Monongahela and Star plants in that city. We are officially advised that it has not been definitely determined to dismantle or move these two plants. The matter is, however, under consideration by the American Tin Plate Company, as that concern believe the advantages for manufacturing are greater outside than within the city limits of Pittsburgh. The Monongahela and Star Tin Plate plants are the two largest in the Pittsburgh district. The Monongahela plant was formerly owned by the Monongahela Tin Plate Company, being an Oliver interest, and was built in 1894-95, and was first put in operation February 14, 1899. It contains 14 heating furnaces, six annealing furnaces and 14 24 x 32 hot and ten 20 x 34 inch cold mills, the product being about 25,000 gross tons annually. The plant of the Star Tin Plate Company was owned by Mackintosh, Hemphill & Co., and was built in 1895, being first put in operation January 1, 1896. It contains eight double heating furnaces and eight 24 x 32 inch hot and nine 22 x 32 inch cold mills, the product being black plate for tinning and tin and terne plate, the annual capacity triple turn 12,500 gross tons. There is some talk that the American Tin Plate Company have bought a site of land on Neville Island, adjoining purchases recently made by American Steel & Wire Company, and will erect a very large tin plate plant on this island, removing the Star and Monongahela plants to that location. This report, however, has not been officially confirmed.

Jones & Laughlins, Limited, operating American Iron & Steel Works, South Side, Pittsburgh, have given the tonnage men employed in the Bessemer Steel Works an advance of 10 per cent., taking effect January 1, 1900. The men work on a sliding scale, based on the price of Bessemer steel billets, and the advance in prices of billets entitles them to higher wages.

The Homestead Steel Works of the Carnegie Steel Company, Limited, at Homestead, Pa., will be closed on December 23 for the Christmas and New Year holidays, remaining idle until about January 1. During the suspension some needed repairs will be made. The Edgar Thomson Steel Works, at Bessemer, will be closed about the same time for the same period. The suspension of work at both of these plants this year will be as brief as possible, owing to the fact that both mills are crowded with tonnage.

The new plant of the Standard Seamless Tube Company, at Ellwood City, Pa., which has been under erection for some months, is nearing completion. Chas. E. Pope of Pittsburgh is president of the concern.

The Youngstown Bridge Company are getting out the material for several new buildings for the new Bessemer steel plant being erected by the Republic Iron & Steel Company, at Youngstown, Ohio.

Jacob S. Coxey of Massillon, Ohio, who is to build a new steel casting plant, has about decided to locate it at Ashtabula, Ohio.

The New Castle Works of the National Steel Company, at New Castle, Pa., are closed down while some necessary repairs are being made.

We have already referred in these columns to the organization of the Duquesne Steel Foundry Company, at Pittsburgh. This concern have decided to locate their new steel casting plant at Coraopolis, on the Pittsburgh & Lake Erie Railroad, about 12 miles from Pittsburgh. The concern were granted a charter of incorporation last week.

Wm. B. Pollock Company of Youngstown, Ohio, have received the contract for the shell of the new furnace of the Warwick Iron & Steel Company, at Pottstown, Pa., also for the four stoves, each to be 100 feet high and 22 feet in diameter, and for the draft stack, which is to be 220 feet high.

Arrangements are being made to refit the charcoal blast furnace at Newberry, Mich., and get it in shape for active operation by spring. It has been idle for about six years. The new owners are car builders of Buffalo, N. Y. The charcoal furnace at Manistique, Mich., owned by other parties, is also to be repaired and started.

The establishment of a rolling mill at Buffalo, N. Y., has been decided upon by a group of Western capitalists, composed largely of men who are now interested in the Inland Steel Company of Chicago. They have been very successful in operating a rolling mill at Chicago Heights, producing agricultural and merchant shapes from old steel rails. While the inference is naturally drawn that the Buffalo mill will be operated on the same lines, that question has not yet been settled.

The Harrow Spring Company, Kalamazoo, Mich., have decided to erect a rolling mill to supply themselves with the steel shapes which they require.

The Republic Iron & Steel Company are removing to Youngstown the machinery of the steel plant forming part of the Springfield Iron Works, at Springfield, Ill. The machinery is in good condition, but has not been operated for several years.

It will be utilized to advantage in the construction of the company's new steel works, at Youngstown. The iron rolling mills at Springfield will continue to be operated.

The Lima Steel Casting Company, Lima, Ohio, manufacturers of open hearth steel castings, have bought the steel casting plant of the Lima Locomotive & Machine Company, and will operate it. The directors and officials of the new company are as follows: L. G. Neely of the Auglaize Machine Company, St. Marys, Ohio, is president; G. W. Van Dyke of Lima is vice-president; D. E. Harlan, secretary and treasurer, and these officials with J. W. Van Dyke of the Solar Refining Company and J. D. S. Neely, general manager of the Ohio and Indiana Gas Company, comprise the directors, and also all of the stockholders. We are advised the plant was bought and paid for in cash, and there is no indebtedness of any kind against the company. On December 15 D. E. Harlan severed his connection as secretary and treasurer of the Lima Locomotive & Machine Company, and acting general manager, and will fill the same position with the new company. The concern advise us that they are now in good running order, after making necessary repairs and improvements on the old plant, and are in position to fill general orders for every kind of steel castings on short notice. They expect to make a specialty of mining and heavy machinery castings made from acid open hearth steel.

## Machinery.

The business of Howell & Saxon, iron founders, who for the past 40 years were situated at Park avenue and Hudson street, New York, and at 351 Adams street, Brooklyn, and of which the late James Howell was a member, has passed into the hands of the Eagle Iron Works of Brooklyn, of which Jacob May is the president. The sale includes the buildings, which will be demolished, and patterns and machinery of both the foundry and shops, which will be transferred to shops of the Eagle Iron Works.

The J. H. Long Machine Company of Boston about a month ago sold their East Boston wharf property, preliminary to the purchase of a new location in South Boston. The latter transaction, just put on record, involves the transfer to the company of 39,250 feet of land with brick and frame buildings on L street, East Second street and East First street, South Boston. Charles H. Rollins *et al.* are the grantors. The assessed value of the new plant, which is better suited to the company's needs than the old one, is \$32,800.

Thomas Carlin's Sons Company, operating boiler, foundry and machine shops on River avenue, Allegheny, Pa., issue an announcement to the trade in which it is stated that the firm of Thomas Carlin's Sons have not ceased to exist, but merely from incorporation have become a new firm. The firm's manufacturing interest and merchandising wares remain as heretofore.

The Deere & Marsur Company, plow manufacturers, Moline, Ill., are turning out a larger product than ever before. They are melting 35 tons of metal daily in their foundry, surpassing any other foundry in Moline.

The three-story machine shop and office building occupied by Palmer & DeMooy, Cleveland, was practically destroyed by fire last Tuesday. The large one-story building occupied by the same company as a foundry was saved, but the contents were damaged by water. A few books were saved from the offices, but all the valuable patterns and nearly all of the machinery were destroyed. The loss on the buildings is estimated at \$2500, and the contents destroyed will not exceed \$7000 or \$8000. The company had a large number of orders on hand and were working full capacity. The factory will probably be rebuilt at once.

A new 84-inch Collau Cupola is being installed by the Union Foundry Works, Seventy-sixth street and Greenwood avenue, Chicago. They will be able to melt 40 tons a day. Other improvements are being made in the plant to keep up with the increasing requirements of their trade.

The Sioux Iron Works of Sioux City, Iowa, and the Norfolk Foundry & Mfg. Company of Norfolk, Neb., have been consolidated under one management, but will be operated under separate names, the former as the Sioux City Foundry & Mfg. Company and the latter under the same name as before. E. A. Bullock of Norfolk will be president of the consolidated concern, and Perry Smith will be secretary and treasurer. The capital stock will be \$50,000. The Sioux City Works will add a complete machine shop, a sheet iron working department and a department for the manufacture of hot air furnaces.

The Fred. M. Prescott Steam Pump Company, Milwaukee, Wis., are building for the Oliver Mining Company's Aurora mine two large six-cylinder triple expansion pumps of the direct acting type, with a capacity of 2000 gallons per minute. These pumps will be placed 1100 feet under ground, and pump to the surface in one lift. They are also building two pumps of the crank and fly wheel type for the Penobscot mine with a capacity of 7000 gallons per minute, lifting the water 310 feet.

The Ashland Boiler Works of Chicago have leased and started the Herrick plant, at Racine Junction, Wis.

The Flier & Stowell Company, Milwaukee, Wis., have petitioned the city authorities for the vacating of a street adjoining their plant on the east to permit an extensive addition to their foundry. The company's business is increasing rapidly, owing to the heavy demand for large engines. They have recently

been obliged to refuse good orders because their plant has been crowded to its capacity. They would like to be able to take advantage of the active demand at present for heavy machinery.

Johnson & Noyes have opened an office at 1522 Monadnock Building, Chicago, as Western representatives of Beaudry & Co., Boston, Mass., manufacturers of power hammers and forging presses.

The Thomas Belting Company have leased the building at 46 and 48 South Clinton street, Chicago, and will engage in the manufacture of leather belting of all descriptions as well as deal in mill supplies. They will occupy the entire building, which is four stories high. J. M. Thomas, long connected with the Chicago Belting Company, is president, and G. O. Thomas is secretary and treasurer.

The Milwaukee Automobile Company, with a capital stock of \$100,000, have been incorporated at Milwaukee, Wis. They will build steam motors for passenger and freight transportation. W. H. Starkweather, formerly of the Milwaukee Engineering Company, recently absorbed by the American Bicycle Company, is one of the incorporators, his associates being W. G. Smith and Herman Pfell. The company will use the factory formerly operated by the Milwaukee Engineering Company in the manufacture of bicycles. Mr. Starkweather has been making experiments with automobiles for more than a year and is confident that the new company will be able to turn out a light, cheap and efficient machine.

The American Metal Welding Company of Pittsburgh have made application for a charter of incorporation. The incorporators are W. A. Magee, Jno. M. Anderson, Crombie Allen, Morgan E. Gable and C. H. Reymer.

The plans for the new works of the Union Switch & Signal Company, to be built at Swissvale, Pittsburgh, were submitted to bidders in the Westinghouse Building, in that city, last week. The main building will be two stories high and will be of iron and steel construction and covered with corrugated siding. It will cover a ground space of 562 feet in length, with a depth of 30 feet. The main building will have three divisions, and work will be started in early spring. The total cost of the building is expected to be \$250,000, and it will be equipped with modern machinery throughout.

The Davies Casting Machine Company of Sharpsville, Pa., have received an order for one of their machines for the blast furnace of the Shenango Furnace Company, at Sharpsville, Pa.

Russell & Co., engine builders, of Massillon, Ohio, have received a contract for two 600 horse-power cross compound engines for operating the electrical generators in the new open hearth plant of the Sharon Steel Company, at Sharon, Pa. One of the engines is to be completed in five months, and the other in ten months.

The Fischer Foundry & Machine Company, engine builders, of the South Side, Pittsburgh, will erect a large addition to their present machine shop and install some new tools, which will considerably increase their output. The new building will be of iron and steel construction, covered with corrugated siding, and will be 75 x 150 feet in size. It will be equipped with electric motors for driving all the machinery. The electric equipment has been purchased from the Bullock Electric Mfg. Company, Cincinnati, and the General Electric Company, Schenectady, N. Y. Two 25-ton and one 10-ton electric traveling cranes, designed by the firm, will also be installed. The Fischer Foundry & Machine Company have been doing a very large business in the building of engines for several years, and this increase to their capacity has been made imperative by their growing business.

Maxwell M. Mayer Electric Company of 2369 Second avenue, New York, report that the demand for their dynamos and motors has been so great that they have been compelled to work day and night for the past four months. The foreign trade has shown considerable increase. Large lots of motors have been shipped to Buenos Ayres and to different cities in Brazil and Mexico.

The International Fire Engine Company, Jersey City, N. J., have been incorporated with a capital of \$9,000,000 for the manufacture of fire engines. The incorporators are H. S. Stallknecht, Wm. A. Dinamore, Wm. N. Lecate.

The Carlin Machinery & Supply Company, Allegheny, Pa., have recently secured an order for the shipment of a number of derricks to Tokio, Japan.

#### Hardware.

The Gurney Refrigerator Company, Fond du Lac, Wis., have bought the property of the Gurney Land & Lumber Company, at Gurney, Wis., comprising saw mills and a large stock of hard wood lumber. The mills were started last week sawing lumber for the use of the new owners.

A Pittsburgh concern, organized for the purpose of manufacturing a new Edison bicycle tire shield, have secured a lease on the plant of the New Kensington Foundry Company, at New Kensington, Pa., and will enlarge that works and begin operations at once. The names of those interested in the project are J. P. Kirkland, J. D. McCutcheon and others of Pittsburgh. W. S. Armstrong of New Kensington is manager.

The Enterprise Mfg. Company, Akron, Ohio, advise us that they have moved the American Fish Hook Company's plant, formerly at New Haven, Conn., to Akron, and are now busily

engaged in completing new additions to accommodate it. They expect to have the machinery in running order in a few days. The Enterprise Mfg. Company are well known as manufacturers of fishing tackle, and are intending to leave nothing undone to make their hook department a success. They have made some decided improvements in the old plant, and expect to materially increase the output in the near future.

Hobart B. Ives & Co., New Haven, Conn., have recently purchased the five-story factory building formerly occupied by the American Fish Hook Company, to be used exclusively for their business, which has outgrown its present quarters. The firm are manufacturers of a line of builders' hardware specialties, including the well-known Ives patent sash locks. The factory acquired although quite an old building is regarded as one of the best built in the city for manufacturing purposes, and is referred to as especially well arranged to accommodate the Ives business. The firm will take possession about April 1 next.

Stanley Rule & Level Company, New Britain, Conn., are erecting a new building, 186 x 41 feet, six stories high. It will be used for offices and for packing, shipping and storage purposes. When completed the premises made vacant by the change are to be enlarged and used for manufacturing.

#### Miscellaneous.

The Illinois Car & Equipment Company of Chicago, Ill., contemplate making an addition to their plant, at Hegewisch, and have placed in the hands of an engineer the matter of designing a structural steel shop to be equipped with all modern tools, such as pneumatic riveters, heavy presses, large punches and shears, electric cranes, &c., with a capacity of at least ten steel cars per day, and a possible output of 20 by night and day operation. The company expect to commence the construction of the building at as early a date as possible after the approval of plans, and hope to be in a position to manufacture cars early in the spring.

The Pressed Steel Car Company of Pittsburgh have received an order from the Pittsburgh & Lake Erie Road for 800 steel cars of different sizes, to be finished within four months. The same road have placed orders with the Pittsburgh Locomotive Works for 30 new engines of the consolidated type, which will be built as fast as possible.

On January 1, 1900, 27 blast furnaces lined throughout with fire brick, made by the Kentucky Fire Brick Works of Firebrick, Ky., will be in blast. The factory at Firebrick, while very old, has been kept modern by the addition and adoption each year of any features calculated to improve the quality of the product. It is one of the largest fire brick plants in the United States, and is located in the midst of several thousand acres of the flint clays owned by the company.

The S. Obermayer Company, Cincinnati and Chicago, state their running time for the year just closing approximated 16 months in the operation of their various factories, the demand being almost entirely of a high grade, for which better prices were readily obtained, and in consequence of which the cheaper grades of foundry facings have been entirely abandoned. The year just closed has proven to be the greatest from a business point of view since the organization of the company in 1870. Their export trade has increased 50 per cent. during 1899, and the prospects are exceedingly bright for 1900. More new foundries were supplied with equipments by them than for three years past.

A receiver was appointed on Tuesday for the Columbia Iron Works & Dry Dock Company of Baltimore, Md., on the application of Henry A. Parr, who received the appointment from the City Court. In his application Mr. Parr stated that the company are under obligations to the amount of about \$400,000, most of which is due to Baltimore banks on promissory notes. The application also says that the petition was filed in order to avoid a scramble for payment by the creditors when the company's obligations mature. The company alleged that they have large claims against the Government for work in course of construction, and when these are satisfied they will be in a position to pay all their obligations. Ex-Mayor William T. Maister of Baltimore is president of the company.

An industrial museum is soon to be established in the City of Mexico under the auspices of the Mexican Government, which will contain extensive exhibits of the mineral, agricultural and manufactured products of Mexico. The articles exhibited by Mexicans at the recent International Fair, at San Antonio, Texas, which have been presented to the Government, will be placed in the museum, forming a nucleus for the collection. The museum will occupy the old church edifice of Bettemitas, in one of the principal thoroughfares of the capital.

In his annual report to the Treasury Department Commissioner General Powderly of the Immigration Bureau gives the total number of immigrants arriving in the United States during the year ended June 30, 1899, as 311,715, an increase over the preceding year of 82,416. He expresses the opinion that at least 25,000 persons were not included in this number through a defect in the law, as well as an indeterminate number coming from Canada and Mexico who are not accounted for.

## The Iron and Metal Trades.

Whether and to what extent the heavy decline in the stocks of the industrials will affect the Iron and Steel trades is still a matter purely of individual opinion. So far as observations during the past few days throw light upon the subject, the influence of recent happenings in Wall street is not important. In some quarters buyers have apparently withdrawn to await developments. A tight money market is expected to check new enterprises to some extent, and in that manner may affect consumption.

In Foundry Iron we are approaching the dullest season of the year, which is natural since the furnace operations are continuous, while many consuming shops either close down or run slack. The second half of December and the month of January always try the market and afford opportunities for picking up bargains.

English newspapers report further sales of Hematite Pig for American account to the extent of 20,000 to 30,000 tons. We cannot trace any such transactions. We learn, however, that import inquiries have gone abroad for special Bessemer without leading to business, because English makers are sold up for the first half of 1900. While warrant markets have been weakening lately—as is natural under the circumstances—the ocean freights have advanced sharply, owing to the withdrawal of many boats for the Cape service.

To what extent the Boer war will affect the international situation is a matter of much difference of opinion. We have the usual arguments in favor of an upward movement in prices, based on purchases for armament and withdrawal of working forces. On the other side is the check to new enterprises all over the civilized world which may be expected to follow growing timidity of English capital.

It may develop that to a considerable extent and for some time to come we may continue to travel our own gait, with little chance to market much Iron or Steel abroad, but also free from any pressure from that quarter.

In the volume of transactions the week has not been notable in any direction. In Steel Billets and Sheet Bars buyers and sellers are far apart. The dullness in the Sheet and Tin Plate trades seems to cause delays in acceptance of material on older contracts, even in cases where the price is much below recent quotations.

The Beam makers had their annual meeting this week. Throughout the excited times the association has pursued a very conservative course, keeping prices at an intermediate level steadily. Prices which have ruled so long were confirmed, and reports indicate that a heavy tonnage for next year is booked. A good deal of fresh work is in sight.

With so highly speculative metal as Tin the money stringency in London is naturally adverse to values, since realizing is forced. Copper is very dull, while Spelter does not yet seem to have settled down. Recent reports indicate a stiffening in the price for Ore at Joplin. The American Tin Plate Company announce that they will now take orders for delivery during the second quarter of 1900. The prices remain the same.

### A Comparison of Prices

At date, one week, one month and one year previous.

#### Advances Over the Previous Month in Heavy Type. Declines in Italics.

Dec. 20, Dec. 13, Nov. 22, Dec. 20,  
1899. 1899. 1899. 1898.

#### PIG IRON:

	\$23.25	23.25	\$23.25	\$11.25
Foundry Pig, No. 2, Standard, Philadelphia	20.50	20.55	20.75	9.25
Foundry Pig, No. 2, Southern, Cincinnati	<b>23.50</b>	23.50	23.00	11.00
Foundry Pig, No. 2, Local, Chicago	24.90	24.90	25.50	10.00
Bessemer Pig, Pittsburgh	20.50	21.00	20.50	9.00
Gray Forge, Pittsburgh	25.50	25.00	25.50	12.00
Lake Superior Charcoal, Chicago				

#### BILLES, RAILS, ETC.:

Steel Billets, Pittsburgh	35.00	34.00	35.00	15.00
Steel Billets, Philadelphia	nom	36.00	38.00	17.20
Steel Billets, Chicago	nom	37.00	....	17.50
Wire Rods, Pittsburgh	nom	....	....	22.00
Steel Rails, Heavy, Eastern Mill	35.00	35.00	35.00	19.00
Spikes, Tidewater	2.65	2.65	2.65	1.50
Splice Bars, Tidewater	2.35	2.35	2.35	1.15

#### OLD MATERIAL:

O. Steel Rails, Chicago	20.00	20.00	20.00	8.50
O. Steel Rails, Philadelphia	22.00	23.00	24.00	10.25
O. Iron Rails, Chicago	26.00	26.00	30.00	12.00
O. Iron Rails, Philadelphia	27.00	27.00	29.00	12.50
O. Car Wheels, Chicago	21.00	21.00	21.00	10.50
O. Car Wheels, Philadelphia	21.00	21.00	23.00	9.25
Heavy Steel Scrap, Chicago	18.00	18.00	19.00	7.75

#### FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	2.05	2.20	2.20	1.10
Common Iron Bars, Youngstown	2.10	2.10	2.15	.95
Steel Bars, Tidewater	2.40	2.40	2.50	1.10
Steel Bars, Pittsburgh	2.20	2.20	2.25	.95
Tank Plates, Tidewater	2.50	2.50	2.80	1.12½
Tank Plates, Pittsburgh	2.25	2.35	2.50	1.00
Beams, Tidewater	2.40	2.40	2.40	1.20
Beams, Pittsburgh	2.25	2.25	2.25	1.10
Angles, Tidewater	2.40	2.40	2.40	1.12½
Angles, Pittsburgh	2.25	2.25	2.25	1.10
Skep, Grooved Iron, Pittsburgh	1.95	1.95	2.00	1.07½
Skep, Sheared Iron, Pittsburgh	2.35	2.35	2.40	1.17½
Sheets, No. 27, Chicago	3.00	3.00	3.00	2.00
Sheets, No. 27, Pittsburgh	2.80	2.80	2.90	1.95
Barb Wire, f.o.b. Pittsburgh	3.55	3.55	3.55	1.65
Wire Nails, f.o.b. Pittsburgh	2.95	2.95	2.95	1.80
Cut Nails, Mill	2.45	2.45	2.50	1.10

#### METALS:

Copper, New York	16.50	16.75	17.00	11.00
Spelter, St. Louis	<b>4.60</b>	4.60	4.25	3.77½
Lead, New York	<b>4.65</b>	4.65	4.57½	3.70
Lead, St. Louis	<b>4.65</b>	4.60	4.45	3.57½
Tin, New York	24.75	25.00	28.00	18.70
Antimony, Hallett, New York	9.75	9.75	9.75	7.25
Nickel, New York	38.00	38.00	40.00	33.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York	4.84	4.84	4.84	3.10

### Chicago. (By Telegraph.)

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, December 20, 1899.

Conditions in the Iron trade taken as a whole were never more satisfactory than at present. Manufacturing establishments of all descriptions are abundantly supplied with orders which will easily carry them through the dull period of the winter. The weakness reported in finished products in other markets is not felt here to any extent except in Plates. An occasional low price is reported which on investigation invariably proves to have been made by some jobber having contracts at comparatively low prices on which he is able to cut under prevailing quotations while realizing a handsome profit for himself. A much better inquiry is noted in many directions. The outlook for the early erection of large buildings in Chicago is very promising. New manufacturing enterprises are projected, one of the most important being a Cast Iron Pipe foundry at Chicago Heights, near this city, by J. B. Clow & Sons, to have a daily capacity of 300 tons.

**Pig Iron.**—The business of the past week would have been considered quite satisfactory a year since, but is regarded as light in comparison with the heavy trade of November. Numerous inquiries are being received for early shipment as well as for deferred deliveries. Malleable Bessemer is in good demand. The local furnace companies have all they can do to keep their customers supplied on old contracts and have practically no Iron for sale. The Southern furnace companies are nearly all sold up for the first six months of next year, even the largest producers having but little of their prospective make not yet covered by contracts. The railroad companies have withdrawn their notices of an advance in freight rates on Southern Iron on January 1, but the furnace companies are not convinced that an advance will not be made at the last moment and are hurrying shipments wherever possible on low priced contracts so as to get as much Iron delivered as possible while present freight rates hold. We quote for cash as follows:

Lake Superior Charcoal	....	\$25.50 to \$26.00
Local Coke Foundry, No. 1	....	24.50 to 25.00
Local Coke Foundry, No. 2	....	23.50 to 24.00
Local Coke Foundry, No. 3	....	22.50 to 23.00

Local Scotch, No. 1.....	25.00 to	25.50
Ohio Strong Softeners, No. 1.....	25.50 to	26.00
Southern Silvery, according to Silicon.	25.50 to	27.00
Southern Coke, No. 1.....	22.85 to	23.85
Southern Coke, No. 2.....	21.85 to	22.85
Southern Coke, No. 3.....	21.10 to	21.85
Southern Coke, No. 1 Soft.....	22.85 to	23.85
Southern Coke, No. 2 Soft.....	21.85 to	22.85
Foundry Forge.....	20.85 to	....
Gray Forge and Mottled.....	20.85 to	....
Southern Charcoal Softeners, according to Silicon.....	21.85 to	25.85
Alabama and Georgia Car Wheel.....	24.85 to	25.85
Malleable Bessemer.....	25.00 to	26.00
Standard Bessemer.....	.... to	....
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	32.00 to	32.50

**Bars.**—Manufacturers of Bar Iron report a noticeable increase in small orders from day to day which total quite a fair volume of business. Large consumers are not buying far into the future, but are waiting to see what the turn of the year may develop. Specifications are coming in rapidly on contracts, so that the mills are not in any special need of additional work. A better inquiry is reported for Soft Steel Bars, but few sales are now being made covering any considerable quantity. Manufacturers are more than hopeful of the future and say that by February 1 their mills will again be uncomfortably loaded with orders. Mill shipments continue to be quoted at 2.30c. to 2.40c., Chicago, for Common Iron, 2.30c. to 2.45c. for Soft Steel Bars and 2.65c., base, for Bands. Jobbers report an improvement in their trade last week. More orders are being received and many more inquiries. They have never had such a trade in December. They continue to quote small lots from stock at 2.90c. upward for Bar Iron, 2.65c. upward for Soft Steel Bars, and 3.90c. to 4c. for Norway and Swedish Iron.

**Car Material.**—Heavy specifications are being received by manufacturers against contracts, but new orders are few.

**Structural Material.**—Conferences are daily being held between committees of contractors and labor unions and encouraging progress has been made toward a settlement of the local labor trouble. The unions have agreed to remove all restrictions on the amount of work done in a working day. Large building projects are consequently coming out and a great deal of activity is expected in Steel construction. A large warehouse is to be built on the North Side of the city which will take 1700 tons. The Northwestern University at Evanston have decided to erect a number of new buildings which will cost in all \$3,000,000 and will require 8000 to 10,000 tons of Steel. Other projects include the new Tribune Building, the Chicago National Bank Building and a large office building. Details of other structures have not yet been made public, but quite a number are known to be taking shape. The demand for bridge work has been better, among the week's contracts being one for 5000 tons placed with a local bridge works by a leading Western railroad company. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.80c. to 2.90c. The demand for small lots from local stocks continues fair.

**Plates.**—Mill business is fair at lower prices, while store business is rather light. The market is in a waiting condition, buyers covering their necessities and not anticipating requirements. The local mill is out of the market, having its produce sold for several months. Mill shipments, Chicago delivery, are quoted as follows: Tank, 2.80c. to 2.90c.; Flange, 3.15c. to 3.25c.; Marine, 3.30c. to 3.50c.; Fire Box, 4c. to 5½c. Jobbers quote Tank from store at 3.10c. to 3.25c., and Flange, 3.25c. to 3.50c.

**Merchant Pipe.**—Seasonable quiet prevails, but a much better business is expected after the new year opens. Carload lots are quoted at 50, 10 and 5 to 50 and two 10's, while less than carloads are selling at 50 and 10 to 50, 10 and 5 per cent. Merchant Steel Boiler Tubes are quoted as follows: 1½ to 1¾ inch, 35 per cent. off on Steel or Iron; 2 to 2½ inch, 50 per cent. off on Steel and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

**Sheets.**—Inquiries for both Black and Galvanized Sheets continue to increase, and further contracts for the next quarter of the year have been placed. The number of sellers in this market has been reduced by the withdrawal of several of the leading mills, who refuse to name price, and for the present mill shipments of No. 27 Black Sheets are quoted at 3c. to 3.25c., Chicago, but it is becoming more difficult to find mills willing to take the bottom rate. Mill shipments of Galvanized Sheets are firmly held at 75 and 10 per cent. as minimum. The quotation of 70 and 10 on mill shipments made last week was a typographical error. Jobbers report a light de-

mand, the rough weather having checked outdoor work. They quote small lots of No. 27 Black at 3.25c. to 3.40c., and Galvanized Sheets at 70 and 10 to 75 per cent. off.

**Merchant Steel.**—Manufacturers' agents report only a light inquiry of new business coming up. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

**Billets and Rods.**—No transactions are reported and local manufacturers are not making quotations.

**Rails and Track Supplies.**—Rail sales have been light, only small quantities having been taken since last report. Inquiries for some 35,000 tons are now the subject of negotiation and are expected to develop into business at an early date. Light Rails have been in fair demand. Heavy Sections are quoted at \$35 to \$37, according to quantity, and Light Sections at \$35 to \$42, according to weight. Prices of Track Fastenings are as follows: Steel Fish Plates, 2.25c. to 2.50c.; Iron Fish Plates, 2.30c. to 2.50c.; Spikes, 2.65c. to 2.75c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.20c.; Iron Links and Pins, 3.15c.

**Old Material.**—Comparatively little business is being done in Scrap, the largest buyers being out of the market and smaller consumers waiting to see what effect this will have on prices. Offerings of all kinds of material are very liberal. Approximate market prices are as follows per gross ton:

Old Iron Rails.....	\$26.00 to \$27.00
Old Steel Rails, mixed lengths.....	20.00 to 20.50
Old Steel Rails, long lengths.....	22.00 to 23.00
Relying Rails.....	28.00 to 30.00
Old Car Wheels.....	21.00 to 22.00
Heavy Melting Steel Scrap.....	18.00 to 19.00
Mixed Steel.....	14.50 to 15.00

Following prices are per net ton:

No. 1 Railroad Wrought.....	\$22.00 to \$23.00
No. 1 Railroad Track.....	19.00 to 20.00
Dealers' Forge.....	16.00 to 16.50
Iron Fish Plates and Angle Bars.....	22.00 to 23.00
Steel or Mixed Iron and Steel ditto.....	18.00 to 19.00
No. 1 Cut Mill, for busheling.....	13.00 to 14.00
Pipe and Flues.....	12.50 to 13.00
Heavy Cast.....	13.00 to 14.00
Stove Plate.....	8.50 to 9.00
Railroad Malleable Cast.....	15.00 to 15.50
Agricultural Malleable Cast.....	14.00 to 14.50
Iron Car Axles.....	26.00 to 27.00
Steel Car Axles.....	22.00 to 23.00
Horseshoes.....	16.50 to 17.00
Cast Borings.....	9.00 to 9.50
Steel Car Axle Turnings.....	11.50 to 12.00
Iron Car Axle Turnings.....	13.00 to 13.50
Machine Shop Turnings.....	10.00 to 11.00
Old Boilers, Iron, whole.....	7.00 to 8.00
Old Boilers, Iron, cut.....	12.00 to 13.00
Old Boilers, Steel, whole.....	6.00 to 7.00
Old Boilers, Steel, cut.....	11.00 to 12.00

**Metals.**—Copper is still falling, carload lots of Lake being now quoted at 17c. and Casting Copper at 16½c. Pig Lead is firmly held with a strong demand, manufacturers quoting Desilverized at 4.60c. December, 4.65c. January, and Corroding, 10c. higher. Spelter is steady at 4.62½c.

**Tin Plate.**—A somewhat better demand than usual at this season is observed for Bright Plates, but Roofing Plates are quiet.

The American Tin Plate Company announce officially that they will now take orders for Tin Plate for deliveries extending through the second quarter of 1900. Hitherto they have limited their sales to deliveries during the first quarter. This enables the buyers to cover their wants for the first six months of the coming year. The prices quoted are the same as those heretofore named for the first quarter of the year.

### Cincinnati. (By Telegraph.)

Office of *The Iron Age*, Fifth and Main streets, CINCINNATI, December 20, 1899.

Pig Iron agencies with representation in other market districts report a normal run of business for the past week. There has been no big buying, and the sum total of small orders has only been fair. In this immediate district, however, trade has been more quiet. A few sales of 500 to 1000 ton lots were booked, but in the main entries averaged only a few carloads at the outside. A sale of 1000 tons Mottled Iron on the basis of \$15.75, Birmingham, and 600 tons Gray Forge at \$16 were made by a Southern furnace. The Gray Forge was for delivery within the next 60 days, the Mottled for a more extended

time. Seven hundred and fifty tons of Southern Charcoal is also reported by an agent, with the information that this sale takes this furnace out of the market until after next June. An order for 3000 tons Malleable was filled, one-half from the Jefferson Texas Furnace, and the other half from an Ohio stack. The outlook for the coming week is for a continuation of the present quietness. The market is still strong and prices are being firmly maintained. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$21.75
Southern Coke, No. 2.....	20.75
Southern Coke, No. 3.....	19.75
Southern Coke, No. 4.....	19.50
Southern Coke, No. 1 Soft.....	21.75
Southern Coke, No. 2 Soft.....	20.75
Southern Coke, Gray Forge.....	\$19.00 to 19.25
Southern Coke, Mottled.....	19.00 to 19.25
Ohio Silvery, No. 1.....	30.00
Ohio Silvery, No. 2.....	29.00
Lake Superior Coke, No. 1.....	\$24.00 to 24.50
Lake Superior Coke, No. 2.....	23.00 to 23.50

*Car Wheel and Malleable Irons.*

Standard Southern Car Wheel, Chilling Grades.....	\$25.75 to \$26.25
Standard Southern Car Wheel, No. 2.....	24.75 to 25.25

Lake Superior Car Wheel and Malleable.....	25.50 to 26.50
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**Plates and Bars.**—General conditions seem unchanged. Trade is good and prices steady. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1 1/2 x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

**Old Material.**—Dealers report no change. Market quiet, trade normal. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$22 to \$23 per net ton; Cast Scrap, \$14.50 to \$15.50 per gross ton; Axles, \$26 to \$27 per net ton; Iron Rails, \$27 to \$28 per gross ton; Car Wheels, \$22 to \$22.50 per gross ton.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 20, 1899.

(By Telegraph.)

**Pig Iron.**—The market has been exceedingly quiet the past week and only small lots of Bessemer, ranging from 1000 to 3000 or 4000 tons, have been sold at \$24, Valley furnace. A small lot of Bessemer Pig for export to Canada was sold at about \$24.75, Valley furnace. The break in the stock market Monday, while creating a good deal of uneasiness in manufacturing circles in Pittsburgh, has not apparently affected the Pig Iron market, as it seems to be as strong as at any time in the past two or three months. Forge Iron is in fair demand at about \$21, at furnace. There seems to be a little more pressure to sell Foundry Iron, and for a firm offer it is not unlikely \$23, Pittsburgh, could be shaded for No. 2. We quote Gray Forge, \$20.90 to \$21; Bessemer, \$24, both at Valley furnace; No. 2 Foundry, \$23; Gray Forge, \$21 to \$21.25; Bessemer, \$24.90, all f.o.b. Pittsburgh. We note a sale of 2000 tons of Bessemer for January and February at \$24, Valley furnace.

**Steel.**—Ideas of buyers and sellers of Steel are very far apart, and, while there is a fair inquiry, not enough Steel is being sold to establish a price. We quote nominally at \$35, f.o.b. Pittsburgh, but on a firm offer it is probable this price would be shaded. We quote Open Hearth Steel at about \$42, f.o.b. at mill, but on large tonnage this price has recently been shaded.

**Sheet Bars.**—There is nothing doing. We quote nominally at \$36, at mill, for Long Bars.

**Spelter.**—We quote prime grades at 4.70c., f.o.b. Pittsburgh.

**Muck Bars.**—The market is quiet and we quote best grades of Muck Bar at \$32.50, Pittsburgh.

**Beams and Channels.**—A meeting of the Beam pool was held in Pittsburgh on Tuesday, December 19. Representatives were present from the six mills composing the association. It was decided to continue the pool next year on the same lines as this and W. C. Temple will continue to be commissioner. No change was made in

prices. The statement that Beams had been reduced to 2c. is incorrect.

(By Mail.)

The slump in stocks in Wall street Monday did not have any serious effect in financial circles in Pittsburgh, but in a large money center like this city could not help being felt. There is a good deal of uneasiness, but no serious results are anticipated. Considering the fact that we are within two weeks of the closing of the year, and the dullest month in the year, the tonnage for this month is fairly satisfactory, and the situation, as a whole, is regarded as reassuring. We have knowledge of quite a number of orders for Finished Material that have been placed this month for shipment immediately after the first of the year. There has been no slump in prices, but the weakness on Sheets, Plates and several lines continues. During the week additional tonnage of Bessemer Pig has been sold at \$24, Valley furnace, for first half. Billets continue to be quoted at \$35 to \$36 for Bessemer, and \$41 to \$42 for Open Hearth, but there is very little doing. Structural Material is in fair demand, while Galvanized Sheets are slightly stronger in tone, as a result of the advance in Spelter. The market shows no material change over last week, and will likely continue in about the present condition until after the first of the year. A good many of the large plants will close on Saturday, December 23, and remain idle until after January 1, for inventory and necessary repairs. It is believed that tonnage in January will show a considerable increase over this month.

**Structural Material.**—The market has been somewhat quiet the past week, and only small lots have been closed. A good deal of work is coming up but will not be placed until after the first of the year. Several of the large mills are still from two to three months behind in deliveries. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.50c., Pittsburgh.

**Bars.**—The situation in Bars is about as noted last week. A fair amount of tonnage is being placed, which, with old contracts taken some time ago, keeps the mills well filled up. A good many plants will close this week, to remain idle until after the first of the year, for necessary repairs and stock taking. We are advised that the American Steel Hoop Company and Republic Iron & Steel Company, the leading makers of Bars, are very firm in their ideas as to prices, and quote at 2.15c. for Iron Bars, f.o.b. Valley mill. In Steel Bars the situation shows no change. A fair tonnage is being placed, and Valley mills quote at 2.25c. to 2.40c., f.o.b. mill Pittsburgh, the lower price being the minimum of the market.

**Plates.**—There has been no material change in the Plate market. The large mills rolling a full line of sizes up to 90 inches or wider quote about 2.50c., at mill, for Tank, 1/4-inch and heavier. Some of the small Plate mills who do not roll over 60 inches wide are quoting Tank, 1/4-inch and heavier, as low as 2.25c., at mill, for early delivery. A fair range of the market on Tank, 1/4-inch and heavier, is 2.25c. to 2.50c. We continue to quote Shell at 2.50c. to 2.60c.; Flange, 2.60c. to 2.70c.; Marine, 2.70c. to 2.80c.; Fire Box, 3c. to 3.75c., depending on quality.

**Steel Rails.**—No large contracts have recently been closed, tonnage being booked by the mills being for small lots only. We quote Standard Sections at \$35 to \$37, at mill, depending on the order.

**Sheets.**—There is no material change in the situation in the Sheet trade. In spite of the dull demand and low prices, some of the Sheet mills are making heavy shipments. One leading mill reports that their tonnage so far this month is considerably in excess of the same period last month. A better demand for Sheets, and also some recovery in prices, is expected after the first of the year, particularly if the price of Sheet Bars can be held at about \$36, at maker's mill. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 2.80c.; No. 28, 2.90c. The recovery in price of Spelter has given a slightly better tone to the Galvanized Sheet market. We quote Galvanized Sheets at 75 and 7 1/2 to 75 and 10 per cent. in carload lots, 15c. freight allowance. When these prices are shaded, it is only done by a few mills and in exceptional cases. The general market on Sheets is accurately represented by the above quotations.

**Merchant Steel.**—New business is dull, but specifications are coming very freely on old contracts. Agricultural Implement makers are also specifying very freely. There is considerable range in prices being quoted by the different mills, some sellers quoting considerably lower than others. For carload lots we quote: Toe Calk, 2.75c.,

base; Tire, 2.75c., base; Open Hearth Spring, 3.25c. to 3.50c.; Plow Slabs, 3-16 and heavier, 2.75c. to 3c.; Bessemer Machinery, 2.75c. to 3c.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Cant Hook Steel, Open Hearth, 4c. to 4.25c.; Crucible, 5c. to 5.25c.; Tool Steel, 7c. and upward, freight allowance not to exceed 25c. Terms, net cash 30 days.

**Pipes and Tubes.**—During the last week considerable tonnage has been placed, aggregating close to 100 miles of different sizes of Pipe, for oil and gas lines. There is a fair demand for Merchant Pipe, considering the fact that December is always the dullest month of the year. The tone of the market is exceedingly strong. Established prices are being rigidly held, with the possible exception of a few jobbers who have some Pipe in stock, bought when prices were lower and who are anxious to realize. We continue to quote Merchant Pipe in carload lots at 50, 10 and 10 per cent. discount, delivered, and in less than carload lots 50, 10 and 5 per cent., maker's mill, no freight being allowed on less than carload lots. We continue to quote Screw and Socket Joint Casing at 37½ per cent.; Inserted Joint, 32½ per cent., with an optional 5 per cent. to dealers. Boiler Tubes are in good demand and prices strong. We quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2½-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered.

**Skelp.**—The Skelp market continues quiet, and prices show no improvement. Some of the Eastern mills that sold a good deal of Skelp in this market some time since are declining to meet present prices. We quote Grooved Iron and Steel Skelp at 1.95c. to 2c.; Sheared, 2.35c. to 2.40c., delivered. In exceptional cases our lower prices on Grooved Skelp have recently been shaded.

**Connellsville Coke.**—The Coke trade remains in about the same condition as noted in this report last week. Practically all of the large consumers of Furnace and Foundry Coke are covered by contracts, and the new demand for Coke is light. The output of Coke in the Connellsville region and shipments for this year will be very much larger than in any previous year in the history of the region. The average of prices will also be much higher, and 1899 has undoubtedly been the most profitable year the Coke business has ever had. The outlook for 1900 as regards output and prices could hardly be better. Many of the coke works have their entire output for next year practically under contract, and at very profitable prices. Foundry Coke for next year has sold at \$3 a ton, and even higher prices are reported, while Furnace Coke has sold from about \$2.65 up to \$3 a ton. The car supply is considerably improved and shipments to Lorain, Ohio, have largely increased on account of the starting up of the two blast furnaces there of the Federal Steel Company. Last week out of 19,558 ovens in the Connellsville region, 18,587 were active and only 971 idle, the output being 196,838 tons, which is probably a banner record. Work on the repairs of the West Overton plant, whose 110 ovens were bought recently by the H. C. Frick Coke Company, is progressing as fast as material can be procured, and these will soon be added to the active ovens.

## Cleveland.

CLEVELAND, December 19, 1899.

**Iron Ore.**—Expectations that the week would prove a quiet one have been more than realized. Some sales of Ore are being made, but for the most part all transactions of this character which may be anticipated at this time were closed up last week. Taking a general view of the situation the Ore may be said to be pretty well sold up, and if there be any weakness in the market, as reported in the East, it is certainly not apparent here. The sales agents express confidence that when Bessemer Pig Iron for the second half is disposed of the furnace men will be in the market to close for the remainder of their needs in Ore. The chartering of vessels for the movement of Ore during the remainder of the present year is of course over, but several cargoes are yet on the way down the lakes, and two or three vessels will undoubtedly load Ore at Two Harbors during the present week. Scattering reports of the season's output of the mines are commencing to arrive at the offices of the operating companies in this city, but no reliable statistics will be available for several weeks yet. It is certain that one of the surprising features of the showing, when it is completed, will be the enormous development of the Mesaba range. The total for 1899 will be something like 6,500,000 tons, an increase of fully 2,000,000 tons over the year previous. Vesselmen, Ore shippers and dock interests are already making preparations for next season's heavy movement of Ore. In addition to the

many new steel steamers now crowding all the lake shipyards contracts have recently been placed for the construction of new loading docks on Lake Superior. The unloading equipment of many of the unloading docks on Lake Erie will be increased, and the Carnegie company will continue experiments throughout the winter with the automatic Ore unloader recently installed on their docks at Conneaut, with the hope of perfecting all details.

**Pig Iron.**—The market continues strong with quotations on the same general basis as for several weeks past. Bessemer is, of course, sold up for the first half of the new year, and even the transactions in the Foundry grades have fallen off somewhat of late by reason of the limited supplies of material available. Sales agents anticipate that as soon as the first quarter of the year is entered upon consumers will commence purchases for the third quarter. The prevailing opinion, however, seems to be that no appreciable change in prices need be anticipated. Southern Irons seem to be selling a trifle more freely in this territory of late.

**Finished Material.**—The dullness occasioned by a combination of the holidays and inventory season has reached excessive proportions during the past week. The order mail has been exceptionally light and the volume of inquiry shows a considerable reduction. The one order of good size was that placed with the local office of the Carnegie Company for 5000 tons of Beams and Channels for combination purposes. Delivery is to be made during the first quarter of the new year. Little activity developed during the week in the Plate, Rail or Bar markets and quotations continue without change. Shipbuilders in this district are having no little difficulty in securing material. Exception will have to be made in the case of the five vessels which the American Ship Building Company (trust of lake yards) are to lay down for the Carnegie Company. These vessels have been apportioned during the past few days. One steamer will be built at the Detroit yard, two steamers and a tow barge at South Chicago, two steamers at Lorain, Ohio.

**Old Material.**—The market has eased off slightly during the past week, but this is probably what was to be expected in view of the general slackening of business conditions. In a majority of cases no reduction in quotations has been made, and where there has been a fluctuation the shaving has been slight. The demand has fallen off somewhat, however.

Otis, Hough & Co., Cuyahoga Building, have been appointed exclusive sales agents for Northern Ohio of the Old Meadow Rolling Mill Company of Scottdale, Pa., manufacturers of Black Steel Sheets.

## St. Louis. (By Telegraph.)

Office of *The Iron Age*, 512 Commercial Building, {  
ST. LOUIS, December 20, 1899.

**Pig Iron.**—As far as transactions go there is really nothing worth mentioning. There is no question whatever as to many founders being in need of Iron, but at the present moment they don't want to buy unless immediate shipment can be had and the Iron put in their yards before January. The quantities so specified are small and conditions named prohibitory. Prices hold firm and absolutely no talk of weakness is had among furnace agents. That sales are not heavier now is undoubtedly due in part to some consumers looking for lower prices, but it is difficult to know on what the present expectations are based. Coke is still in great demand and in the past week the oversold condition presumably of some ovens has led to rejection of orders. We quote on cars St. Louis:

Southern, No. 1 Foundry.....	\$22.25 to \$22.50
Southern, No. 2 Foundry.....	21.50 to 21.75
Southern, No. 3 Foundry.....	20.25 to 20.50
No. 1 Soft.....	22.25 to 22.50
No. 2 Soft.....	21.50 to 21.75
Gray Forge.....	20.00 to 20.25

**Bars.**—The state of the market remains about the same as last week and no change in prices. Bar Iron and Steel have not been affected by the temporary weakness in Sheets and Plates, and mills are said to be unwilling to make the slightest concession. Jobbers' trade is somewhat quieter, as expected at this time of the year. Mill prices for Bar Iron in carloads remain 2.35c., minimum, base, East St. Louis. Jobbers' price, 2.75c. to 2.90c., base. Soft Steel is in good demand; mills' minimum base price is about 2.50c. Jobbers ask 3c., base.

**Rails and Track Supplies.**—Estimates for Rail wants usually made up at this time were doubtless anticipated and covered in the recent heavy orders to mills. The season now at hand having its quieting influence on Track Supplies, nothing unusual is noted for mention,

and we quote: Splice Bars, Steel, 2.55c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.80c.; with Hexagon Nuts, 3.95c.; Spikes, 2.85c.; Steel Links and Pins, 3.20c.

**Pig Lead.**—Refiners report bids still received at 4.65c. for almost any grade, with practically nothing to dispose of. Brokers on the other hand place market at 4.60c. No transactions have occurred to establish a figure to-day. Price of Lead Ore advanced 5c., to \$27.50 per 1000 lbs.

**Spelter.**—None of the smelters are said to be in a position to quote for immediate sales, and as the Ore market is toning up futures are not being considered. As in Lead market, no sales establish our figure to-day, but the reasonable range to quote is 4.60c. to 4.65c. Zinc Ore has stiffened considerably. The top figure was \$36 and none of the higher grades brought less than \$34 per ton.

## Philadelphia.

Office of *The Iron Age*, Forrest Building, Philadelphia, Pa., December 20, 1899.  
(By Telegraph.)

The market appears to be developing a good deal of activity, Pig Iron being particularly strong. Prices show no change, but consumers are disposed to take hold freely when favorable opportunities are met with, but sellers are very firm at quoted prices. The Steel situation is unchanged, and as deliveries are coming in pretty freely there is less need for new purchases. Material which ought to have been sent in last summer is now being delivered, and is for the present a fair offset to the lower prices for finished products, which are in good demand at the inside figures. Muck Bars are neglected, and bids hard to get for good sized lots.

The general situation, considering the nearness of the holidays, is one of unprecedented activity, and would be more so if it was felt that the Steel situation was settled, but the lower figures which were generally looked for have not materialized, and it begins to look as though buyers will have to revise their bids before they can get their orders accepted.

(By Mail.)

**Pig Iron.**—The market is still very dull, but there are indications that prices have about touched bottom. The real strength of the situation is in the great scarcity of material for immediate delivery, and so long as that continues there need be no fear of lower prices. Stocks of Pig Iron, as shown by the last monthly statement of *The Iron Age*, are only about 125,000 tons, which is less than 20 per cent. of what it was a year ago, and this in face of a current production equal to 15,000,000 tons per annum. There appears to be two important questions to be considered in regard to the matter: 1, Can we maintain a production to that extent; and, 2, can we consume so much Iron during the coming year? In regard to the first proposition, it may be said that during the first half of the coming year, we have probably reached the extreme limit of our productive capacity, and in regard to the second, it is tolerably clear that with consumption equal to that of the half year now closing we shall need more Iron than we have had during the past six months. If the assumption is correct in regard to the output, the question of consumption becomes one of the very highest importance. The nearest that can be done toward solving this portion of the problem is to guess at it, basing the answer upon such indications as appear on the surface. On the one hand it may therefore be said that we are confronted with lower prices on Finished Material, which is the usual preliminary to lower prices for the primary materials. In the present case, however, the real basis of strength appears to be at the point where there should be some signs of weakness. If there is going to be any general shrinkage in values. This is a very important feature, and becomes specially marked when stocks are as light as they now are, and when deliveries are called for as they now are at a unprecedented rate, considering the season of the year. Moreover, prospects of the demand continuing are not in the slightest degree impaired. It is not necessary to give specific details, because in a general way every interest that has been in full activity during the present year is likely to be equally well, if not better, employed next year. There is also another feature which does not appear to have attracted notice thus far, although it may become one of very large proportions. Great Britain has entered upon a war which has drawn off a large number of workmen, and instead of being

producers they are now consumers on a scale altogether unexpected until within the past few days. It is not only the men in the field, but the men that are called upon to furnish the men in the field with supplies, that will make the difference. It is difficult to see how this can be done without falling back on the United States to help them out. In every direction, therefore, the indications are favorable for a bigger demand for Iron than has ever been known before, and vast as the business has been during 1899, the first half of 1900 (if not the entire year) is likely to be of still larger proportions. Under such conditions as these it is difficult to see what basis there is for expecting lower prices. For the present last week's prices are in force. There is probably a little stronger undertone, and less Iron for sale at inside figures, but that is about as much as can be said to be strictly within the facts. The range at this time, therefore, would be about as follows for Philadelphia or its equivalent: No. 1 X Foundry, \$25 to \$25.50; No. 2 X Foundry, \$23.25 to \$24.25; No. 2 Plain, \$22.25 to \$22.75; Standard Mill Iron, \$20.25 to \$21; Basic, \$22.75 to \$23; Bessemer, nominal, \$25 to \$26, and low Phosphorus, \$27 to \$28, f.o.b. cars furnace.

**Muck Bars.**—At this season of the year it is not expected that much business can be done, but at about \$30.25 to \$30.50, f.o.b. cars, buyers could be found for good sized lots. Sellers ask \$30.75 to \$31.

**Billets.**—There is some demand for High Carbon Billets, and sales have been made at \$40 to \$42. Soft Steel is neglected, however, as buyers cannot bring themselves to pay the rates demanded in the face of lower prices for Plates, Sheets, Bars, &c. Prices are entirely nominal, with \$37 to \$38 quoted, according to quantity, time and point of delivery, &c.

**Plates.**—There is quite a large demand, some lots of several hundred tons up to 1000 or 2000 ton lots having been taken by bridge builders, shipbuilders, tank and boiler makers, &c. Prices are easier, however, as manufacturers are disposed to fill up to their full limits for the winter months. There is a good deal of work on old contracts to be finished up, but with the large capacity which the leading local mills now have they can in future handle a vastly larger business than has been possible during the year now closing, hence the willingness to name attractive prices on the right kind of orders, say for seaboard or equivalent deliveries: Steel Plates,  $\frac{1}{4}$ -inch and thicker, 2.55c. to 2.65c.; Shell, 2.70c. to 2.80c.; Flange, 3.10c.; Fire Box, 3.30c.; Charcoal Iron Plates, C. H. No. 1, 3c.; Best Flange, 3.50c.; Fire Box, 4c.

**Structural Material.**—There is no great amount of new business at the moment, but prospects are considered to be favorable, and in the meanwhile there is plenty of work to go on with. Prices firm as last quoted, viz. (seaboard or nearby deliveries): Beams and Channels, 15 inches and under, 2.40c.; Angles, 3 to 6 inches, 2.40c.; Zee Bars, 2.40c., f.o.b. Philadelphia; Angle Bulbs and Deck Beams, 2.63c.; Tees, 2.45c.

**Bars.**—There is a good demand for Bars, but prices are very irregular, in some cases pretty well down to 2c. at mill. Several specially desirable orders were taken at 2.02 $\frac{1}{2}$ c. and 2.05c., but many of the leading mills claim to be getting 2.2c. for Refined Iron, and have about all the work they can attend to. Considering the season the demand is certainly very large. The situation in the Bar trade is also very remarkable in Europe, recent advices being as follows: Marked Bars are now £10 10s. per ton. We have to go back for a quarter of a century for a parallel to this figure. In 1869 the list price was £8 per ton, and in the next three years the figure rose to the extraordinary pitch of £16. Then there was a sudden collapse, and between July and October, 1872, a fall of as much as £4 per ton occurred. In the following year, however, there was another upward movement, and by March, 1873, £16 was again quoted. Since then, however, nothing like this price has been obtained. On the contrary, best Bars have been as low as £7, a figure which was touched as recently as 1895. At the beginning of the present year Marked Bars were £8, and since then the following changes have been made: April 13, 10 shillings advance to £8 10s.; June 28, 10 shillings advance to £9; August 19, 10 shillings advance to £9 10s.; October 5, 10 shillings advance to £10; December 1, 10 shillings advance to £10 10s. Quotations for Philadelphia or nearby deliveries are as follows: Ordinary Iron, 2.10c. to 2.15c.; Refined Iron, 2.20c. to 2.25c.; Test Iron, 2.30c. to 2.35c.; Steel Bars, 2.50c. to 2.60c.

**Sheets.**—There is not much demand for the general line of Sheets, and prices are somewhat irregular, particularly when the order is of an attractive character. Specialties are in good demand, however, and work in that line is not hard to get. Prices are unchanged, and about as follows for small lots. Best makes are quoted as follows (Common Sheets two-tenths less): No. 10, 2.90c. to 3c.; No. 14, 3.10c.; No. 16, 3.15c.; Nos. 18-20,

3.20c.; Nos. 21-24, 3.30c.; Nos. 26, 27, 3.40c.; No. 28, 3.50c. to 3.60c.

**Old Material.**—Prices are practically unquotable at the present time, as all depends upon the circumstances in each particular case. This was mentioned in our last week's report, and the same conditions are still in force, and in some cases are of an even more aggravated character than they were at that time. At some points there is a complete blockade, and until the tracks are cleared it will be a difficult matter to give definite quotations. The extreme figures would probably be about as follows for deliveries in buyers' yards: Burnt Iron, \$13 to \$14; Stove Plate, \$14 to \$14.50; No. 2 Light Scrap, \$12.50 to \$13.50; Cast Borings, \$14 to \$14.50; Wrought Turnings, \$15 to \$16; Machinery Cast, \$17 to \$18; Old Car Wheels, \$21 to \$22; Heavy Steel Scrap, \$20 to \$21; Steel Rails, \$22 to \$23; Iron Rails, \$27 to \$29; No. 1 Yard Scrap, \$19 to \$21; No. 1 Railway Scrap, \$24 to \$26; Iron Axles, \$29 to \$30; Steel Axles, \$28 to \$30.

## Birmingham.

BIRMINGHAM, ALA., December 18, 1899.

Nothing of interest in the Iron market transpired during the past week. The business transacted was only the moderate current of small orders. They keep up remarkably well and are absorbing all stock that can be spared. Quotations are unchanged and are still on a basis of \$17.50 for No. 2 Foundry. All that can be said of the market is that it is of the usual holiday character. Production keeps up well, and every interest is striving to turn out all the Iron that capacity will permit. Efforts are constantly in the direction of an increased supply of Coke, and every week now witnesses the completion of new Coke ovens, which are fired as fast as they are ready for business, so that in a short time the district will not only be easy in respect to the Coke supply but will have it for shipment. The Tennessee Coal, Iron & Railroad Company are developing their Coal property as rapidly as circumstances permit. When efforts now under way are completed their output daily will be increased from 17,000 tons to 20,000 tons, and the work will then be but just begun.

The Steel mill operations so far are perfectly satisfactory. Out of 21 tests as to the quality of the Steel made since it started up, every one of them was satisfactory, and the fact is prominent that there will be no trouble as to the character of the Steel it will turn out. Negotiations are in progress now for the sale of round lots covering all of 1900 as to delivery, but prices are withheld from publication.

The publication of the Alabama Car Service Association shows that for November they handled 40,000 cars, an increase of 12,000 cars over November, 1898. Taking this as an index of the increase in general business, the showing is very gratifying. The shipments of Iron to the domestic trade during November were 86,429 tons, about equal to production. The increase over November 1898, was 8000 tons. For the export trade the shipments were 7365 tons. These figures show clearly the activity of business. The Cement works at Ensley have rapidly increased their capacity until it has reached the point where it is equal to 1000 barrels per day. One order booked by the works was for 65,000 barrels for the city of New Orleans. Besides the erection of the various new enterprises mentioned from time to time in these letters every single one of the old industries is adding largely to their improvement account and increasing capacity or adding improved machinery. On every hand one sees practical evidence of this fact.

The L. & N. R. R. is having an extension surveyed from Eullman, which will penetrate the Warrior Coal fields and give it an important tonnage which will be indefinitely increased as the field is developed.

The year is closing with everything showing increase in progress, to be followed, if indications are correct, by the greatest year in prosperity in the history of the district.

## The German Iron Market.

ESSEN, December 3, 1899.—The violent demand in the Iron and Steel market continues unabated, and unfortunately the fact must be added that the finishing mills have not secured any improvement whatever in the matter of supplies of raw material. This is an excellent indication for the continuance of the brilliant state of affairs in our Iron industry. The enormous pressure on production on the part of merchants and consumers and the efforts making by the latter to close for contracts at deliveries extended as far as possible make one very confident of the future. The first condition for any recession

in prices would be more ample offerings, but the contrary is really the case. Cautious business men point to the high rates for money, which might lead to a slackening in business of all kinds. Although this may prove to be the case in some isolated instances, it is to be expected that there will be some easing in the money market early in 1900, and that this will end the influence of this factor.

The Siegen Iron Ores are sold out completely up to the end of next year, and the question of contracts for 1901 has not been taken up yet by the syndicate. It seems certain that when the time comes higher prices will be made, since quotations for Spathic Ore bear no relation to present Pig Iron and Coke prices, nor with current values for finished goods. The question as to the supply of Pig Iron for the year 1900 is still far from a solution. It is certain that the full requirements for next year cannot be covered by the Rhenish Westphalian Works. The result is that large blocks of English Puddling Iron have been bought for delivery during the whole of next year, the price being about 86 to 88 marks, f.o.b., mill. However, it is not now a question of price, the principal point is to procure the Pig Iron. We hear nothing here of American Pig. It is sure that it would find willing takers now. Prices are as follows: Thomas Pig Iron, 85 marks; Foundry No. 1 and Hematite, 95 to 96 marks; Foundry No. 3, 90 to 91 marks; English Foundry, f.o.b. Ruhrtort, 91 marks; Mill Iron, 77 to 78 marks.

It is possible for the next year to cover only about three-quarters of the requirements of Steel, so that rolling mills will have to suffer from present drawbacks. The rod mills, which until now were most sharply affected, will do a little better next year, because this time the Steel available will be more fairly distributed among the consumers according to their requirements. Basic Bessemer Ingots are quoted 120 marks; Blooms, 122 marks; Billets, 127 marks; Sheet Bars, 131 marks. Muck Bar remains scarce in spite of the fact that the season is more favorable to puddling operations. For small lots as much as 140 marks per ton has been paid.

The entire market for rolling mill products remains unchanged. The enormous pressure has not ceased, although we are on the threshold of winter, which generally brings about a slackening business. In Finished Iron the requirements are as strong as they have been, and there is still scarcity of material with dealers and with shops. Contracts have been made at present prices as far ahead as the second half of 1900, the rolling mills being sold out altogether for first half. Iron Bars cost 210 marks. Steel Bars 185 to 190 marks. There is an enormous amount of work at hand for Bands, some of the plants being full up to next fall. The official price remains 190 marks per ton, but more than that is often paid. Beams now cost 130 marks, f.o.b. Burbach, and the Beam mills are still heavily engaged for immediate delivery. It looks as though they would hardly have the chance to roll for stock during the winter. Dealers complain bitterly about extraordinary delays in deliveries.

The Sheet market continues in exceptional position, all the mills having ample work far into next year. Plates are quoted at 215 marks for special quality, 195 to 200 marks for second quality. About 210 marks and above for Sheets, according to quantity and time of delivery.

Business in Wire Rods is quiet, since everything for home consumption has been sold. Inquiry for export is very active, but cannot be covered on account of scarcity of material. Dealers are entering many inquiries for Wire Nails, but the syndicate is holding back. The price for the home market is 27½ marks per 100 kg. As for sales for export, they continue lively in spite of the active American competition, which forces sacrifices in prices, particularly for the East Asian market.

Probably no branch in the Iron industry is as well situated now as are the Pipe mills, all of them having an ample supply of work at very high prices for the domestic market. Discounts are 60 per cent. for Galvanized and 47 per cent. for Black Pipe. There are some American goods still selling, but quantities are so small that they do not influence the market. The scarcity of Skelp Steel troubles some of the mills, and it is particularly for Gas Pipe that Skelp is needed. The production of it will remain difficult since the greater part of the supply must come from the puddle mills. Iron Skelp has sold as high as 220 marks.

Structural shops, Boiler shops and railroad supply works are very actively engaged. As for car builders, some of them complain lately of scarcity of orders for freight cars, but a contract for 8000 to 8500 cars is now in sight.

The heavy demand for Cast Iron Pipe for gas and water lines in our home market and for export continues to be a feature. The amount of Pipe orders on hand is generally considerably greater than in former years, so that full winter work seems secure.

## New York.

Office of *The Iron Age*, 232-238 William street, NEW YORK, December 20, 1899.

**Pig Iron.**—Buyers have almost entirely withdrawn from the market, confessedly to test the effect of recent developments. As a matter of fact, we are now close upon that time of the year when bargains, if ever, come to the surface. Usually it is during the second half of December and during January that there is some pressure to market Iron. Some of the smaller outside producers are even now offering small lots at somewhat considerable concessions, and warrants have been offered as low as \$15.50 for No. 2, Birmingham, when the spot market is nominally \$17.50 for No. 2. From speculative sources warrant Iron has been offered for delivery from April to the end of 1900 at \$14.50, \$2.50 to be deposited as margin by buyer and seller. The transaction, which involved about 5000 tons, was not closed, however. Prices are as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, \$24.50 to \$25.25; No. 2 X. \$23 to \$23.75; No. 2 Plain, \$22 to \$22.50, and Gray Forge, \$19.25 to \$20. Southern brands are quoted: No. 1 Foundry, \$22.75 to \$23; No. 2 Foundry, \$21.75 to \$22; No. 1 Soft, \$21.50 to \$22; No. 2 Soft, \$20.75 to \$21; No. 3 Foundry, \$20.50 to \$21, and Gray Forge, \$20 to \$20.25.

**Cast Iron Pipe.**—The contract for the New York work, involving the use of about 2000 net tons of Pipe, has been taken, but the Pipe order is not yet placed. The market is very quiet at \$31 to \$32 per short ton for 6-inch.

**Steel Rails.**—Reference has been made to a lot of 6000 tons of Steel Rails which have been offered here, the Rails being afloat, returned from Cuba. We are advised that these were Rails shipped from England, that there being trouble about payment they were ordered here and offered for sale. They were finally placed with a railroad system, which intended to use them in its Mexican extensions, to be entered in bond for forwarding to that destination. This sale did not go through, owing to the protest entered against it on the score of certain informalities. The Rail market here is very quiet, both as to Standard Sections and as to Girder Rails. In the latter there is some export inquiry, among the orders in the market being about 10,000 tons for Norway and 5000 tons for Java. We continue to quote \$35, at Eastern mill, for Standard Sections. Track Material is quoted 2.40c. to 2.50c. for Angle Bars and 2.65c. to 2.75c. for Spikes.

**Finished Iron and Steel.**—During the week the contract was placed for a part of the material for the Catholic Orphan Asylum, the order entered now involving about 2300 tons. A number of the mills are still heavily pressed for deliveries. The Beam Association at its Pittsburgh meeting decided to make no change in prices. Plates are a little easier. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.55c. to 2.75c. for Tank, 2.75c. to 2.90c. for Shell, 3.10c. to 3.20c. for Flange, 3.25c. to 3.40c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3c. for C. H. No. 1, 3.50c. for Flange, and 4c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c. on dock. Soft Steel Bars, 2.45c. to 2.50c.; Hoops, 2.70c. to 2.75c., base, delivered.

**Merchant Pipe.**—Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered, and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent.; Inserted Joint, 32½ per cent., for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and on less than carload lots f.o.b. mill. On Boiler Tubes, 1½ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes, 2½-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

T. W. Stiles, 50 Wall street, New York, has been appointed sales agent for the New York district of the Woodward Iron Company of Birmingham, Ala., manufacturers of Pig Iron.

Manufacturers and importers of Detroit, Mich., have drawn up a petition to the Interstate Commerce Commission protesting against the new freight classification which goes into effect January 1.

## Metal Market.

Office of *The Iron Age*, 232-238 William street, NEW YORK, December 20, 1899.

**Pig Tin.**—The London market declined heavily during the week, reaching its lowest point this morning when £101 5s. was touched. The closing cables came somewhat firmer, however, naming £103 for spot and £104 15s. for three months' futures. The market here was kept steady throughout all, and as spot stocks are controlled by one firm here prices were held up very firmly. But futures could have been purchased at a heavy discount had there been any buyers. At the close to-day we quote spot 25c., December, 24½c., and January nominal at 23c.

**Copper.**—There is scarcely any market to speak of. Consumers show no disposition whatever to buy in a speculative way, and the very little business that is going through is on a hand to mouth basis. The producers on the other hand show no disposition to sell. Merchants here state that they never expect any business at this time of the year, but this season matters have been intensified by the position of the money market. John Stanton states that the production for this year will only show the usual 10 per cent. increase over the year previous. As no good bids or offers are made it is difficult to ascertain the correct price of the metal. Quotations can be but nominal. Official quotations have been reduced again, and prices named to-day are 16½c. for Lake, 16¾c. for Electrolytic, and 16¾c. for Casting. Copper brokers state that Lake can be secured at 16¾c. The London market, while firmer at the beginning of the week on the strength of half monthly statistics, declined almost £2, and comes at the close to-day £70 15s. for spot, and £69 10s. for three months' futures. Best Selected has also declined £1 10s., being to-day £75 10s.

**Pig Lead**—Spot is still scarce and the position of the metal continues to be very strong. The American Smelting & Refining Company are now shipping lead over all-rail routes to this city in order to bring it here as quickly as possible. This company announce that there has been no change in their prices, which are 4.65c., New York, December delivery, and 4.60c. for St. Louis and Chicago. Outside points quote spot 4.65c. to 4.75c., stating that it is even difficult to buy at the outside figure. Private telegraphic advices quote the spot St. Louis market 4.62½c. London has experienced a sharp decline, and the close to-day saw prices down to £16 13s. 9d.

**Spelter.**—The market has again reverted to a very soft condition. There is apparently much more Spelter than can at present be utilized in the channels of consumption. Prices are unchanged at 4.60c. to 4.70c. The speculative interests who bought large blocks for export when the price was 4.15c., are now unloading, as the recent advances in prices compelled them to cancel their foreign contracts. The demand is extremely light. We have heard that St. Louis is down to 4.50c. London has declined 5 shillings and is cabled at the close to-day £20 5s.

**Antimony**—Is unchanged as regards to price. Cookson's is quoted 10½c. to 11c., and Hallett's 9¾c. It is said that a brisk business has sprung up during the last week.

**Nickel.**—The price which is being quoted for next year's contract is 38c.

**Tin Plates.**—There is no change; the prices named by the American Tin Plate Company are on a basis of \$4.84 per box of 100-lb. Cokes, New York, or \$4.65 f.o.b. mill.

F. W. Benham of Shelton, Conn., receiver of the Wilcox & Howe Company, announces that the machinery of the drop forging plant of that company will be offered for sale on December 30.

John Stanton reports the Copper production in the United States and of the foreign reporting mines and United States exports as follows, in gross tons of 2240 lbs.:

Reporting mines.	Outside sources.	Total U. S. product.	Product foreign mines.	U. S. exports.
First half 1895....	70,612	9,100	79,712	42,484 34,215
Second half 1895....	84,885	6,600	91,485	43,674 36,507
Total 1895.....	155,497	15,700	171,197	86,178 64,722
First half 1896....	94,180	7,200	101,380	42,255 58,216
Second half 1896....	95,314	7,200	102,514	43,941 67,287
Total 1896.....	199,494	14,400	206,894	86,196 125,503
First half 1897....	105,651	5,000	108,651	44,263 64,870
Second half 1897....	100,555	6,900	107,455	44,007 64,340
Total 1897.....	204,206	11,900	216,106	88,270 123,210
First half 1898....	112,687	7,800	120,487	40,880 68,284
Second half 1898....	108,535	10,250	113,785	43,674 76,831
Total 1898.....	216,222	18,050	234,272	84,554 145,115
First half 1899....	111,987	12,500	124,387	43,629 56,460
July, 1899.....	18,533	2,800	21,333	7,390 7,160
August.....	19,886	2,800	22,686	7,292 10,920
September.....	19,515	3,200	22,715	7,839 7,553
October.....	20,680	3,300	23,990	7,834 11,260
November.....	19,817	3,400	23,217	7,896 10,809

## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING DECEMBER 20, 1899.

Cap'l Issued.	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
\$29,000,000	Am. Car & Foundry, Common..	6,890	13 -13%	13% -13%	-13%	11% -13	11% -12%
29,000,000	Am. Car & F'y, Pref. (7% Non-Cu.)	5,680	57 -58	59 -59%	58% -59	55 -57%	53 -55
19,000,000	Am. Steel Hoop, Common.....	16,500	39% -41	40 -42%	40 -43	38 -40%	36% -39
14,000,000	Am. Steel Hoop, Pref. (7% Cu.)	6,221	78% -80	79 -80	79 -82	76 -78	75 -78%
50,000,000	Am. S. & W., Common.....	122,879	34% -37	35% -38%	37 -38%	32 -38	34 -37%
40,000,000	Am. S. & W., Pref. (7% Cu.)	11,100	87% -89%	88% -91%	.....	85 -90	84% -88
28,000,000	Am. Tin Plate, Common, N. Y..	10,750	25 -25%	25% -27%	25% -27%	24 -26%	24% -27
18,000,000	Am. Tin Plate, Pref., N. Y. (7% Cu.)	3,840	76% -77	77 -78	77 -78	75 -76	74% -76
7,500,000	Bethlehem Iron.....	285	.....	.....	58	.....	58
15,000,000	Beth. Steel, Par \$50, \$1 paid in.	2,075	-17%	17% -17%	.....	15% -17	16 -16%
7,974,550	Cambria Iron, Phila*.....	4,963	44 -44%	44	44	44	43
16,000,000	Cambria Steel**.....	24,513	19% -20	19% -20%	20	18 -19%	16% -18%
11,000,000	Col. Fuel and Iron.....	29,910	41 -44	42% -44%	41% -43%	35% -41%	36 -38%
46,484,300	Federal Steel, Common.....	178,315	51% -54%	52% -54%	51% -53%	39% -42	42% -46
58,258,500	Federal Steel, Pref. (6% Non-Cu.)	43,230	72 -76	75 -76%	73% -76%	70 -74%	69% -73%
32,000,000	National Steel, Common, N. Y..	12,250	36 -37%	37% -38%	36% -37%	33 -36%	31% -34
27,000,000	Nat'l Steel, Pref., N. Y. (7% Cu.)	3,690	91 -91%	90% -91	91	89 -90%	88 -89
5,000,000	Penna., Common, Phila.....	100	.....	.....	.....	80	.....
1,500,000	Penna., Pref., Phila.....	117	-91	.....	.....	89 -93	.....
12,500,000	Pressed Steel, Common.....	8,335	54% -57	53% -55%	54%	49% -53%	49 -50
12,500,000	Pressed Steel, Pref. (7% Non-Cu.)	2,500	85% -86	86	85%	75 -84	75 -84
27,352,000	Republic Iron & Steel, Common.	17,860	18% -20%	19% -20%	19 -19%	16% -18%	16% -18%
20,852,000	Repub. Iron & Steel, Pref. (7% Cu.)	5,777	64 -67	64% -65	64 -64%	62 -62%	60% -62
20,000,000	Tennessee Coal and Iron.....	58,350	78 -87	82 -85%	80 -83	64 -81	70% -79
1,500,000	Warwick Iron & Steel (par \$10)	2,180	-9%	9% -9%	-9%	9% -9%	9 -9%

\* Par \$50. \*\* \$1.50 per share paid in. + 6% guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. + Ex-dividend.

**Bonded Indebtedness:** Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6% debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$13,200,000 Illinois 5% \$7,417,000 B. J. E. R. R. 5% \$1,600,000 Johnson 6% \$6,732,000 D. & I. R. R. 5% \$1,000,000 2d D. & I. R. R. 6% \$10,000 land grant D. & I. R. R. 5%; National Steel, \$2,561,000 6% Tennessee C. I. & R. R. Co., \$8,367,000 6% \$1,114,000 7% \$1,000,000 7% cu. pref.; Pennsylvania Steel, \$1,000,000 5% Steelton 1st 1917, \$2,000,000 5% Sparrow's Point 1st 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Bethlehem Iron, \$1,351,000 5% maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6% \$880,000, Col. Coal & Iron Con. Mort. 6% \$2,510,000, Col. Fuel & Iron Gen. Mort. 5% \$2,503,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899.

## Iron and Industrial Stocks.

The forced liquidation in industrial shares which had been proceeding for some time culminated on Monday in a movement closely approaching a panic. The iron and steel stocks shared in this collapse, and extraordinary prices were made. American Steel & Wire on Monday and Tuesday dropped to 32, Tin Plate to 24, Cambria Steel to 16%, Federal Steel to 39% for common and 69 for preferred, National Steel to 31% for common and 88 for preferred, Pressed Steel to 49 and 75, Republic to 16% and 60%, Tennessee to 64 and Warwick to 9. On some of the unlisted stocks very sharp declines were also recorded.

To-day there was a tendency toward a sharp recovery, notably in Steel & Wire on talk of a dividend on the common in January, but a reaction began in the middle of the day.

	Bid.	Asked.
International Silver, common.....	10 1/2	21
Otis Elevator, common.....	20	21
Otis Elevator, preferred.....	87	89
H. R. Worthington, preferred.....	109	.....
Cramp's Shipyard stock.....	80	84
Pratt & Whitney, common.....	3 1/2	5
Pratt & Whitney, preferred.....	50	54
E. W. Bliss, common.....	132	...
E. W. Bliss, preferred.....	125	...
U. S. Projectile.....	95	100
Barney & Smith Car, common.....	21	25
Barney & Smith Car, preferred.....	94	100
International Pump, common.....	13	14 1/2
International Pump, preferred.....	58	60
Diamond State Steel.....	5 1/4	5 1/4
Tidewater Steel.....	12	12 1/4
Sloss & Sheffield Steel & Iron, common.....	26	30
Sloss & Sheffield Steel & Iron, preferred.....	70	.....
National Tube, subscriptions, common.....	41	43
National Tube, subscriptions, preferred.....	91	92
American Bicycle Company, common.....	17	20
American Bicycle Company, preferred.....	50	60
American Bicycle Company, bonds.....	91	.....

The Empire Iron & Steel Company have declared a dividend of 3 per cent. on their preferred stock, payable January 2.

The Hussey-Truxall Steel Company, New Kensington, Pa., will hold a special meeting of stockholders on January 19, 1900, to vote upon the proposed issue of \$50,000 preferred stock.

The Susquehanna Iron & Steel Company, Columbia, Pa., manufacturers of skelp, have declared a quarterly dividend of 6 per cent. This concern have recently bought a large plot of ground adjacent to their present works and will put up a pipe and tube mill.

The annual meeting of the stockholders of the Pressed Steel Car Company of Pittsburgh will be held in Jersey City, January 9, 1900. According to the provision of the charter, no stock can be voted which has been transferred on the books of the company within 20 days next preceding an election.

The net earnings of the Colorado Fuel & Iron Company for October, 1899, were \$192,848, as compared with \$71,785 in October, 1898. From July 1 the figures are \$574,182 and \$243,055, respectively.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street, NEW YORK, December 20, 1899.

Several good sized transactions in machine tools were put through during the last week. Information as to the purchasers and the amounts of the contracts are carefully guarded. We understand, however, that three of the largest deals were consummated by automobile builders or concerns preparing for the building of automobiles. It is also said that these orders were all awarded to Manning, Maxwell & Moore, who, it is well understood in the trade, are most fortunately equipped in the shape of tools on hand. The fact that they were able to supply the tools without delay was doubtless a strong point in their behalf toward securing the orders.

The president of one of the largest machine tool manufacturing firms in existence said yesterday that the demand and prospects for machine tools were excellent and that he wished that he had a line of about \$500,000 worth of tools to offer at this time.

There are indications that several good sized projects which have been in abeyance for some time will be put through early next year. It is said that the Edison Portland Cement Company are about to close on their machinery equipment. This company have selected Stewartville, N. J., as the site for their plant. The bids for this machinery were submitted some time ago and were of course based on immediate acceptance. A representative of the Edison Company visited various machinery houses last week to ascertain the changes in the market.

Orders are now being placed by the Commercial Construction Company of 1 Madison avenue and the Wm. Grieser Construction Company of 11 Broadway, for machinery and apparatus to be installed in the new brewery being built at Sixty-eighth street and East River by the Central Brewing Company.

J. S. Coxey was in this city last week purchasing the equipment for the steel foundry which he will erect at Massillon, Ohio. The main building will be 500 x 80 feet. Mr. Coxey gave a blanket contract for the structural material to be employed in the buildings and the entire equipment to W. J. Carlin & Co., whose New York offices are located in the Ivins Syndicate Building, Park row. Considerable of the material which the Carlin Company will install in the plant has been taken from Brewster, N. Y., concentrator and foundry, which they recently dismantled.

The contract for the steam shovels and machinery required in excavating for the new Bayonne plant of Babcock & Wilcox Company was awarded to W. J. Carlin & Co.

The E. P. Allis Company of Milwaukee and New York have received a contract for the construction of a large copper smelting and refining plant to be erected by the Rio Tinto Company, Limited, at the mines in Spain. The furnaces will measure 42 x 160 inches at the tuyeres. They will be of the sectional steel water jacket type and will be complete with inclosed charging top, overhead down takes and 12 feet steel settlers. The converters will be of the trough design, with hydraulic tipping device and the necessary converter and refining stand, molds, trucks, &c. The carrying ladies from the settlers to the converters will be handled by a 30-ton electric traveling crane, having 4 movements driven from a 50 kw. generator. The crushing and pulverizing and mixing machines for converter lining will be moved by electric power. The blowers and generator will be driven by a Reynolds cross compound Corliss engine. The compressor for supplying air to the converters will be of the same type. Hydraulic pumps and elevators, blowers, scales, generators, motors and other requisite machinery are included in the contract. When the plant is completed it will be one of the largest and most modern in existence.

Contracts have been placed with the Chicago Pneumatic Tool Company of 120 Liberty street for an extensive equipment of tools to be used in the operation of the São Paulo Railway Light & Power Company, Limited, in Brazil. Heaton, Cree & Kerr of Callao, Peru, have also ordered an equipment of pneumatic tools from this company. They will be employed in shipbuilding. Another shipbuilding concern who ordered tools of this type from the Chicago Company are the Kawasaki Shipbuilding Company of Kōbe, Japan.

The Orford Copper Company are supplying their entire plant at Constable Hook, N. J., with electric motors. They will also install a central electrical generating station. The contract for the work has been awarded to the Northern Engineering Company of 39 and 41 Cortlandt street.

Krajenski & Pesant, whose New York offices are located at 32 Broadway, have recently acquired the plant formerly operated by the Havana Iron Works. The new owners of the shops are now overhauling the entire plant with a view of putting it in first-class condition. For this purpose they are ordering considerable quantities of machine tools in this country. The plant will be utilized chiefly for the building of organ making machinery. Krajenski & Pesant also own a controlling interest in the Havana Dry Dock Company. A 5600-ton dry dock is being built at Havana by the company. The orders for the machinery, &c., required in the equipment and building of the dock will be furnished by this company.

We are informed that an addition is being built to the machine shop of the Winchester Repeating Arms Company, at New Haven, Conn. An equipment of machine tools will doubtless be purchased by the company.

The contract for the heating and ventilating plant for Public School 20 of Jersey City was awarded to the Buffalo Forge Company of 39 and 41 Cortlandt street. The contract was awarded through Joseph C. Duff of Jersey City. The apparatus will consist of two exhausters with blast wheels 92 inches diameter, two blowers with blast wheels 90 inches diameter, 20,000 feet of heater and improved heater section form and two 75 horse-power horizontal engines, class A type, running in oil. One engine will have shaft extended directly through the two exhausters, and the other will have its shaft extended through the two blowers. The equipment will be an exceptionally fine one, as everything is ordered of the highest quality obtainable.

We are informed that the Newport News Shipbuilding & Dry Dock Company of Newport News, Va., received an order for four new freight and passenger vessels. They will cost about \$2,400,000.

It is reported that there will shortly be an opportunity for manufacturers of coal handling machinery to figure on such machinery for various Swedish ports, for, according to information from London, England, several of the firms that are in the habit of contracting with the Swedish State Railways for coal have complained about the slowness with which the coal is received from the ships by the authorities. Between 200 and 300 tons of coal are received daily. The Swedish Railway Department is now contemplating the erection of modern coal discharging plants at various towns. Several systems have been reported upon and a decision will soon be reached in the matter. The plants will probably be erected at Götterburg and Malmö.

The official figures of the Treasury Bureau of Statistics place the total value of imports of merchandise into the United States in November, 1899, at \$74,452,283, an increase of \$2,255,945 over October's imports. The total value of the exports of merchandise in November

amounted to \$123,752,038, a decrease of \$2,208,889 from those of the preceding month.

### Colors of Heated Steel Corresponding to Different Temperatures.\*

BY MAUNSEL WHITE AND F. W. TAYLOR, BETHLEHEM, PA.

There is, perhaps, nothing more indefinite in the industrial treatment of steel than the so-called color temperatures, and as they are daily used by thousands of steel workers it would seem that a few notes on the subject would prove of general interest.

The temperatures corresponding to the colors commonly used to express different heats, as published in various text books, hand books, etc., are so widely different as given by different authorities it is impossible to draw any definite or reliable conclusion. The main trouble seems to have been in the defective apparatus used for determining the higher temperatures. The introduction of the Le Chateller pyrometer within the last few years has placed in the hands of the scientific investigator an instrument of extreme delicacy and accuracy, which has enabled him to determine the temperatures through the whole practical range of influence, and led to the establishment of new melting and freezing points of various metals and salts, which are now accepted as the standard of all scientific investigation. There have not, however, been published any results with the Le Chateller pyrometer seeking to establish a correspondence of temperatures with color heats.

The first work done in this line of which we are aware is that of Dr. H. M. Howe, some eight or nine years ago. His results, however, have not been published, and with his kind permission we are enabled to give them here:

	Degrees C.	Degrees F.
Dull red	625 to 650	1,022 to 1,157
Full cherry	700	1,292
Light red	850	1,562
Full yellow	950 to 1,000	1,742 to 1,882
Light yellow	1,050	1,922
Very light yellow	1,100	2,012
White	1,150	2,102

The nomenclature used for color heats differs with different operators, but in our investigation we have adopted that which seems more nearly to represent the actual color corresponding to the heat sought to be represented. We have found that different observers have quite a different eye for color, which leads to quite a range of temperatures covering the same color. Further, we have found that the quality or intensity of light in which color heats are observed—that is, a bright, sunny day, or cloudy day, or the time of day, such as morning, afternoon, or evening, with their varying light—fluence to a greater or less degree the determination of temperatures by eye.

After many tests with the Le Chateller pyrometer, and different skilled observers working in all kinds of intensity of light, we have adopted the following nomenclature of color scale with the corresponding determined values in degrees Fahrenheit as best suited to the ordinary conditions met with in the majority of smith shops:

	Degrees.
Dark blood red, black red	990
Dark red, blood red, low red	1,050
Dark cherry red	1,175
Medium cherry red	1,250
Cherry, full red	1,375
Light cherry, bright cherry, scaling heat,* light red	1,550
Salmon, orange, free scaling heat	1,650
Light salmon, light orange	1,728
Yellow	1,825
Light yellow	1,975
White	2,200

\* Heat at which scale forms and adheres—i. e., does not fall away from the piece when allowed to cool in air.

With the advancing knowledge of, and interest in, the heat treatment of steel, the foregoing notes, it is hoped, may prove of some value to those engaged in the handling of steel at various temperatures, and lead to further and wider discussion of the subject, with a view to the better understanding and more accurate knowledge of the correct temperatures. The importance of knowing with close approximation the temperatures used in the treatment of steel cannot be overestimated, as it holds out the surest promise of success in obtaining desired results.

This demand for more accurate temperatures must eventually lead to the use of accurate pyrometric instruments; but at present the only available instruments do not lend themselves readily to ordinary uses, and the eye of the operator must be largely depended upon; therefore, the training of the eye, by observing accurately determined temperatures, will prove of much material assistance in the regulation of temperatures which cannot be otherwise controlled.

\* Paper presented at the New York meeting of the American Society of Mechanical Engineers.

## Increase in Illinois Coal Production.

A press dispatch from Springfield, Ill., states that a summary of the coal report for the year ending July, 1899, reveals that during the last year the total output of the mines in Illinois was 5,000,000 tons more than in any previous year. According to the Bureau of Labor Statistics the average days of active operation for shipping mines were 205.7, which is greater than any previous year, except 1893, when the average was 226. Illinois now ranks second, Pennsylvania being first, in volume of bituminous coal production. The summary is as follows:

Number of counties producing coal.....	52
Number of mines and openings of all kinds.....	889
New mines or old mines reopened during the year.....	129
Mines closed or abandoned since last report.....	121
Total output of all mines, in tons.....	23,434,445
Number of shipping mines.....	323
Total output of shipping mines, tons.....	22,402,083
Number of mines in local trade only.....	566
Output of local mines, tons.....	942,362
Total tons of lump coal.....	17,465,583
Total tons of other grades.....	5,968,862
Average value per ton, all grades, at the mines.....	\$0.7852
Average value per ton of all lump coal, at the mines.....	0.9186
Average value per ton of other grades.....	0.4008
Average home value of total product.....	18,443,946
Average number of miners employed during the year.....	26,449
Average number of other employees.....	10,542
Total wages paid all employees, except office help.....	14,736,179
Number of men accidentally killed.....	88
Number of men injured so as to lose a week or more.....	597

An English newspaper states that reports, said to be well founded, are current in Paris of a project for combining the principal producers of zinc in various countries. Germany is the chief source of this metal, its production being about 140,000 tons per annum. Belgium yields about 110,000 tons and the United States about 100,000 tons. Zinc ore is also obtained, in much smaller proportions, in Holland, Italy, Spain, Australia, and Tunis. From Tunis the supplies have been considerably increasing within the last two years. The entire production of the metal throughout the world is estimated to be 460,000 tons, of which 350,000 tons are contributed by Germany, Belgium and the United States. The movement in favor of combination is understood to proceed, or at least to be most earnestly promoted, in Germany, where already some sort of agreement exists among the producers of zinc. Indeed, one Belgian authority declares it is not being seriously entertained anywhere else. Other usually well-informed Belgian authorities state, however, that the proposed scheme is making progress, and that it has fair prospects of success. It is added that for its achievement it is not necessary to go outside the countries where the largest quantities are obtained, since effective control of prices can be secured if the producers of 300,000 tons can be brought into the combination.

Commissioner-General Peck has designated the International Freight and Transportation Bureau of the National Association of Manufacturers to assist exhibitors at the Paris Exposition in the forwarding of their exhibits. William C. Barker, Produce Exchange, New York, chairman of the committee of the association in charge of that work, states that, owing to the lack of storage room on the exposition grounds, it has been thought necessary to provide temporary storage facilities at the port of entry on the other side, where exhibits can be stored when discharged from the vessel, and held until wanted by the Bureau of Installation at Paris. Therefore the National Association of Manufacturers has arranged for the ocean transportation, warehousing for sufficient time and the transportation to the Exposition buildings for one charge, so that American exhibitors will know just what it is going to cost them for the transportation of their exhibits from the seaport of this country to the Paris Exposition buildings before shipment is made.

What is said to be the most extensive steam super-heating plant in the world has lately been completed by the Aachen Mining Company at Rothe Erde, Germany. All the boilers have been provided with super-heaters, 42 of which have been installed in the flues connected with a similar number of Cornish double flue boilers, having aggregate heating surfaces of 47,363 square feet; besides these an additional set of five superheaters is connected with a second group of 24 Cornish boilers, with a heating area of 26,910 square feet. An interesting fact pertaining to this plant is mentioned, namely, the small loss of heat in the steam pipes used for conveying the steam to a distance, this loss being at the rate of only one degree, Cent., for each length of 42 feet of 24-inch steam pipe, the total distance trav-

eled by the steam being 1050 feet. The estimated saving in fuel by the use of this plant is from 15 to 20 per cent.

## The Price of Lumber.

The question of the future price of lumber is one which is occupying the minds of those engaged in the industry at the present time, and it is freely asserted that it will never again be as cheap as in recent years. On this head the *Cleveland Leader* observes that it is already a fair question whether or not lumber will ever be cheap, as values were rated less than one year ago. No sound judge of economic and industrial conditions can doubt that many staples will lose much of the advance made in the past ten months. It is inevitable, in the nature of things. With timber and all its products the case is different. The darkening shadow of inadequate or very expensive supplies lies over the trade in merchandise which comes from the forests. It will not be permanently lifted by any known agency. With population and production of all kinds fast increasing, and the country gradually filling up, the demand for timber and wood of all kinds will naturally increase. That means heavier drafts upon the forests, and the best possible care of our remaining sources of supply can hardly make lumber cheap and plentiful, in the old sense. There may be temporary depression in the market, but reactions from too sudden and violent advances in the price level will scarcely last long. Under such conditions it is the imperative duty of all governmental and educational authorities to do what they can to guard against the threatened lack of timber in the United States. There is no plainer responsibility.

The recovery of the coating from the large amount of scrap tin which comes from tin sheets, and the utilization of the sheets which are left, has claimed considerable attention for some years past. In Allegheny a small plant is being operated at the present time in the manufacture of sash weights, the base of supplies being the scrap left from scrap tin after the coating has been removed. Another concern who are about to engage in utilization of the coating, and also the sheets that are left, are the P. Wall Mfg. Company of 720 Preble avenue, Allegheny. An electrical process will be used to recover the tin as oxide, which will be sold for making enamel for bathtubs and sanitary ware. The sheet scrap is to be bundled in a hydraulic press to be sold to open hearth steel makers.

The Sturgeon Bay (Wis.) *Advocate* says that the Ann Arbor line, operating a car ferry across Lake Michigan, from Menominee to Frankfort, has contracted to deliver 20 carloads of iron ore daily to the latter port during the winter. It will be taken thence by rail to blast furnaces in Ohio or elsewhere.

At Brown Point, Ind., last week the court decided that a non-union workman discharged at the instance of a labor union has no redress in law. The court held that the union has a legal right to demand the dismissal of any man not a member of the union. The case was that of Walton *vs.* Lake Lodge, No. 2, Amalgamated Association of Iron and Steel Workers. Walton was discharged by the Inland Forge & Iron Company of Chicago on demand of the union. No charge of incompetency was preferred against him and his sole offense was not being a member of the union. He thereupon brought suit for \$20,000 damages against the union.

For violating an injunction restraining them from interfering with non-union workmen, five members of the United Metal Workers' Association were sentenced last week by Judge Holdom, in Chicago, to imprisonment for terms of 4 to 14 days.

The Eureka Fuel Company of Chicago, an identified interest of the Federal Steel Company, have given a contract to Thomas McNally, a contractor of Pittsburgh, for the building of 400 coke ovens at Footedale, near Uniontown, Pa., work on which will be started at once.

The Emlyn Iron Works have been organized to build a plant at East Chicago for the manufacture of merchant iron.

Mayor Van Wyck of New York City has signed a resolution of the Municipal Assembly authorizing the city Commissioner of Bridges to contract for borings and soundings for two proposed new bridges over the East River. The Commissioner is authorized to expend \$50,000 on the preliminary surveys for each bridge.

**Great Lake Shipping.**

Details of the full figures of Sault Ste. Marie Canal traffic for December have not been received, but they will add enough to the 24,636,533 tons of the season to December to make a round 25,000,000 tons. Of this more than half, or 13,600,000, are iron ore, indicating the importance to the traffic of the lakes of this class of freight. It is to the iron ore shippers that the public must look for the force that has secured the deepening of the lake channels and the constant improvement in all aids to navigation from Duluth to Buffalo. The value to the steel makers of America of these aids, which have brought down the freight rates from several dollars a ton 12 or 14 years ago to an average contract rate this year of about 50 cents, is one that can scarcely be appreciated.

While the Sault statistics are immense they by no means cover the lakes as a whole, all freight that originates and ends outside of Lake Superior not being included. There are no official and authentic figures for this tonnage, but it is estimated that it amounted the present year to about 30,000,000 tons.

The past season has been unusually free from accidents to lake shipping, not one of the losses of the year to December 1 being to a craft either large or valuable. This record was broken December 13, when the fine steel steamer "Arthur Orr," the property of the Canada Atlantic Company, was wrecked at the entrance to Georgian Bay. This loss was especially unfortunate for the company, as they had just bought the ship and needed it for their next year's trade between Duluth and Chicago and Parry Sound, at the foot of Georgian Bay. Last year the company had five fine steel ships under charter, but these passed into the hands of the National Steel Company, and will be operated for the owners next year. Since the sale the Canada Atlantic have been scouring the lakes for vessels of the type they need, but had succeeded in getting but two, and all shipyards are so full that none can easily be built. Now one of these two is gone. The Canada Atlantic have built up a very large and profitable package and export trade, and need half a dozen large ships. The "Orr" was wrecked in November, 1898, near Duluth, but was rebuilt and enlarged during last winter.

The steel ships to be built for the Carnegie Company (Pittsburgh Steamship Company) are to go up at the Detroit, Lorain and Chicago yards of the shipbuilding combination, one, two and three, at each respectively. All but one to be built at Chicago will be steamers. They are of the largest type, and fitted with the latest and best appliances, including quadruple engines, water tube boilers and, probably, with automatic and mechanical stoking grates and steam towing machines. It is fortunate for the owners of these ships that they have steel from their own works, as in any other event they could by no possibility be constructed this winter. In this connection it is interesting to note that the construction of an immense grain elevator for the Great Northern Road, at the head of Lake Superior, has been stopped till spring on account of the delay in securing material, which is to be steel plates and angles. The contract for this house was let last spring, and Mr. Hill then stated to the writer that he had an option on all the steel at prices much under the price then obtaining and for as early delivery as possible, and he fully expected to have the elevator ready this winter. Up to date only a portion of the lower story of the house is erected.

The first of the four 500-foot steel ships for the American Steel & Wire Company will be launched January 15, and others at intervals till late next year. So far as can be seen from work in sight and undertaken since, these will be the largest ships on the lakes for some time to come.

Vessels are running on Lake Superior now, and expect to continue into the new year, possibly all winter.

**A Large Contract for Scales.**—The Great Northern Railway are building a terminal elevator at West Superior, Wis., which, it is said, will be the largest elevator ever built in the world. The Standard Scale & Supply Company, Limited, of Pittsburgh have secured the contract for furnishing 18 1600-bushel hopper scales, equivalent to 18 scales of 50 tons capacity each. This size of hopper scale is the largest ever built, and in fact hopper scales of this capacity have never before been demanded. All these scales will be equipped with the Reed recording attachment, made exclusively by the Standard Scale & Supply Company, Limited. This recording attachment has been adopted by some of the largest railroads in the United States, and is also in use at a large number of blast furnaces and manufacturing plants throughout the country. The demand for railroad scales for some time past has been very large, and the Standard Scale & Supply Company, Limited, have re-

ceived within a short period from the Baltimore & Ohio Railroad an order for two 100-ton railroad track scales; from the Louisville & Nashville Railroad, one 80-ton railroad track scale; from the Wisconsin Central Railroad, one 80-ton railroad track scale; from the Grand Rapids & Indiana, one 80-ton railroad track scale, and from the Indiana, Illinois & Iowa Railroad, two 80-ton railroad track scales. The works of the Standard Scale & Supply Company, Limited, are at Bellefonte, Pa., while offices and warehouses are maintained on Wood street and Third avenue, Pittsburgh.

**Pumping Engines for Cleveland.**

The Water Works Department of the city of Cleveland will advertise for bids this week on two or four vertical, triple expansion, crank and fly wheel condensing pumping engines with a capacity each of 25,000,000 United States standard gallons every 24 hours. The first engine must be completed within 18 months, the second in 21 months, the third, if the city decides to accept three, in 30 months, and the fourth, if the city wants it, in 36 months. The engines shall be erected and operated independently, to be of the self contained type, supported entirely on cast iron frames thoroughly cross braced and resting on the bed plates secured to the foundation provided for them by the city. The engines must sustain a steam pressure of 150 pounds per square inch at the throttle valve, and pump against an average pressure of 82 pounds per square inch on the pumps, inclusive of suction lift. The pump barrels and valve chambers, together with their connections, must be made of sufficient strength to withstand a working pressure of 250 pounds to the square inch. A test pressure of 250 pounds to the square inch will be applied if required by the superintendent. The engines will be required to perform a duty based on plunger displacement equivalent to not less than 140,000,000 foot pounds of work for each 1,000,000 heat units consumed; the duty trials to be made at the stipulated rate of 25,000,000 gallons in 24 hours against a pressure of 82 pounds per square inch at the pumps, including suction lift, and with steam pressure not exceeding 150 pounds per square inch at the throttle.

The city will give no bonus for additional pumpage capacity shown in the engines, but will exact a forfeit of \$1500 for each 1,000,000 foot pounds of duty the engines fall below the stipulated 140,000,000 pounds per 1,000,000 heat units. A fifth engine of similar type of 20,000,000 gallons capacity will also be required in the near future for one of the old pumping stations.

The Indiana, Pa., *Gazette* for December 13 says that on the preceding Monday representatives of the Lackawanna Iron & Steel Company filed 60 deeds in the recorder's office in Indiana County covering 10,000 acres of coal lands which the Lackawanna Company recently secured in Buffington and East Wheatfield townships. The money paid was about \$180,000. The entire purchase of coal lands in Indiana County by the Lackawanna Company is about 13,000 acres. The *Gazette* says that the Lackawanna Company have purchased a site for their new plant at Buffalo, N. Y., but that it would be at least two years before the company would begin active operations in Indiana County. The *Gazette* further says that the Beech Creek Railroad will handle the entire output of the Indiana mines. The coal purchased is of coking quality.

The Pencoyd & Philadelphia Railroad Company of Philadelphia, with a capital of \$50,000, have taken out a charter of incorporation, the incorporators being Percival Roberts, Jr., of Lower Merion, Pa.; and P. W. Roberts, C. C. Price and C. Major of Philadelphia.

The Keystone Bridge Works Department of the Carnegie Steel Company, Limited, of Pittsburgh, have ready for shipment to New York City what is claimed to be the largest girder ever constructed. It is 135 feet long and weighs about 65 tons. A second girder of the same dimensions and weight is to be built at this works.

The American Steel & Wire Company of Pittsburgh are advertising for a large tonnage of coal for the new plant to be erected on Neville Island. Individual or small contractors are particularly invited to bid on lots of from 50 to 100 tons a day.

The Northeastern Steel Company, Limited, of Middlesborough, England, have offered an issue of £250,000 4½ per cent. debenture stock to pay for improvements.

It is estimated that at the close of this year there will be 3500 independent telephone exchanges in operation in the United States, having over 750,000 instruments. The increase of independent telephone companies in the past year has been very rapid.

# HARDWARE.

## Condition of Trade.

THE last week of December draws near with an excellent business in progress throughout the country, thus closing a year of exceptional prosperity in the Hardware and Metal trades. A good business continues to be done by the jobbers, who are kept busy taking care of the orders which are coming in from retail merchants, while manufacturers generally if not selling as many goods as a short time ago are in most cases occupied in clearing up their order books and getting ready for the large business of next year. The matter of revising quotations is receiving a good deal of attention from manufacturers, some of whose prices have not been brought up to the present level of costs, as many of them have been working on raw material purchased at low prices. In such lines, until there sets in a reaction from the high prices of Iron now ruling, gradual advances may be expected, and it is not unlikely that early in the year there will be frequent announcements of changes in price. While some manufacturers have taken advantage very freely of the opportunity to advance prices others with a more conservative disposition have been slow to do so, and have fallen in with the general upward movement only when really necessary. The matter of inventory is beginning to engross attention, and will call for careful judgment on the part of the merchants, especially as to the prices at which the value of stock on hand should be computed. It will obviously be easy to make a more favorable showing for the year's business than the outcome will justify if inventory prices are higher than those at which the goods will eventually be disposed of. A conservative policy in this regard is the wisest, letting the year 1900 set out with a chance to give a good account of itself without the handicap of a stock estimated at fictitious values. It may be that in the natural course of things there will be something of a decline in many lines, and moderation in pricing up present stock will make it easier to have a good showing at the end of next year. It is a matter for congratulation that so many merchants, even following this conservative course, will be able in balancing their books to show a very satisfactory result of their labor and enterprise during the memorable year now closing.

### Chicago.

(By Telegraph.)

Jobbers in Shelf Hardware say this is the best December they have ever seen. The demand for all kinds of goods is remarkable for the season. Dealers are buying staple merchandise simply for their immediate necessities, but the business thus coming to the jobbers makes a large daily aggregate. A particularly heavy demand was felt this month for Cutlery, Silverware and all kinds of fancy goods. A larger trade than usual is being done in Skates, Sleds and other winter sporting goods and Toys. The general prosperity of the country is enabling all classes of people to purchase liberally for the approaching holiday season, and jobbers are reaping the benefit of this large trade. The jobbers of Sheet

Metals, Tinnery Stock and related lines find their business affected by the approach of the inventory season. Their customers are also imbued with the impression that prices may be lower, and will not buy any more than enough to cover their bare necessities. The only change in prices of any importance during the week was a 5 per cent. advance made by the manufacturers on miscellaneous Wire Nails. Heavy Hardware jobbers report some improvement in their trade over the previous week. Winter weather has brought with it a heavy demand for certain classes of goods. Inquiries are also better for the staple articles which they handle. Burden's Horseshoes have been marked up 20 cents per keg, and jobbers' selling prices on Horseshoes at Chicago and St. Louis are now \$4.25 for all standard brands, including Burden's.

### St. Louis

(By Telegraph.)

Business is holding out much better than usual considering the nearing inventory operations. A good indication of activity is that some jobbers are unable to begin promptly at stock taking, owing to stress of sales. Interest in seasonable goods is felt as weather hardens. Skates in heavy movement the past few weeks were checked again by rainy weather, and the season being late it is not expected that bulk of sales will equal last year's. Builders' Hardware has advanced about 11 per cent., and makers are said to be 60 days behind in shipments of staple goods. Sundry small items not having daily call are found to command new prices when stocks are to be replenished. Wire Cloth is prominent in present transactions, and all hands seem convinced a scarcity will develop. Prices are now \$1.40 to \$1.50, according to quantity. Makers of Common Screen Doors raised prices 35 cents, and on fancy 50 cents per dozen, with 5 per cent. on Window Screens and Frames. Wire Brads and miscellaneous Nails have advanced 5 per cent. Some buyers are undoubtedly holding back, believing that goods in general will be more plentiful and at lower figures, but no agreement is had as to when this may come about. In fact, opinions on present market are largely individual. On the other hand, manufacturers visiting and in close touch with this market almost unanimously advise their trade that no change will be witnessed for some time in present prices. Long time contracts are no longer wanted by factories, and disposition is to take specifications subject to prices ruling at date of shipments. This is particularly true of Saws, and is an innovation to jobbers. Factories claim they are only now clear of former contracts and beginning to have benefit of advances. While the Heavy Hardware trade is quiet, due to closing of business for the year, it is a matter of some surprise that it keeps up so well. The recent depression in speculative stocks has had no effect on legitimate commercial transactions. Burden's Horseshoes have advanced 20 cents, and Heavy Hammers and Sledges 5 per cent. Shipments of Carriage Bolts are behind, and in this line also it is said no manufacturers are willing to contract ahead at present prices. Plates and Sheets are still a bit weak, and in this market to-day No. 27 Black can be had at 3.50 cents, and Galvanized at 70, 10 and 5 per cent.

### Cleveland.

THE W. BINGHAM COMPANY.—The near approach of the inventory season has retarded business somewhat. There is still, however, a very good demand for this season of the year—better than the average, in fact. Orders for spring season's goods are being freely placed

and indications point to a shortage in some lines. Wire Cloth has advanced to \$1.50, and most makers are filled up and are refusing any additional business.

Winter weather, which has been holding off so long, is at last here and has put a stop to many building operations. It has stopped entirely the demand for Terne Plates, Galvanized Iron, &c., but there is still a fair call for Charcoal and Coke Plates. Galvanized Iron, which has been weak for some time, has begun to show more strength, and makers are not offering the extremely low prices that have prevailed lately.

Collections are fair.

#### Philadelphia.

**SUPPLEE HARDWARE COMPANY.**—It is an encouraging sign of the times and of the conditions of trade throughout the country to be able to report that trade continues active and prices continue firm. Activity in trade will evidently lessen within a few days owing to the approaching holiday season, when salesmen leave the road to spend the holidays with their families.

The retail trade we think have generally voiced the belief that their trade has been better this fall than for some years. It has certainly shown itself in large cities. The general retail trade, not confining itself to Hardware, but including all kinds of goods, possibly was never so active as it has been in our city this month. The nearest approach to it was in the year 1892, when we were in the height of prosperity, but the four years following were most depressing and the holiday season, so far as purchases for gifts or presents was concerned, made a very unfavorable comparison. The present year has shown greatly improved conditions for the mechanics, laborers and clerks, in fact they cover the entire line, and will enable Christmas for many to be spent with a more joyful feeling than for some years past.

Regarding firmness in prices of goods, no doubt there will be a general equalization January 1, and salesmen all over the country will start for the year 1900 with prices regulated and with an average higher than it is at present. The changes in prices which have carried with them advances have been favorable to the retail trade, as in all cases jobbers have not brought their prices up to the standard compared with manufacturers' costs. But we can infer with a great degree of certainty that when the inventory is taken the last days of December, or January 1, goods must all show the market value and selling prices will be regulated according to the cost prices. No one but a very unwise merchant will sell his goods upon any other plan. If he were to go out and sell based on what he might guess goods would be one year later, the time would come when he would regret his mistake.

Thus far we have made no mistake in predictions made as far back as October, 1898, that goods would greatly advance from that date up to July 1, and if they did not advance during the last half year of 1899 (which they have) they would remain firm, and we now predict they will continue to remain firm during the next six months, and when an equalization of prices conforms to the raw material it will be of that gradual process that it will be a great disadvantage to any one who attempts starving his stock through the process.

#### Louisville.

**W. B. BELKNAP & Co.**—The year is drawing to a close without any of the demoralization which is often manifest during the last 30 or 60 days of each calendar year. The mills are apparently so well supplied with orders that they do not think it worth while to press for new business, and, as we said before, the conservative buying latterly has served to make necessary filling in orders, the aggregate of which must be not inconsiderable. The consumption for new enterprises, particularly mines, the construction of necessary buildings and machinery, is still nearly at full tide. We estimate the profitableness of such commodities as coal, ore, lumber, &c., at the present figures is enough to stimulate production, and

this leads to demand for material that will contribute to that.

The same is true of railroads. Their carrying capacity is taxed and all the deficiencies of their equipment thus brought to light for remedy.

The grateful rise in the Ohio River will let out the coal from above, though the price of that is so well controlled that it does not mean a lower range of values. It will, however, take the pressure off of the railroads immediately in the Ohio Valley and be a great relief. The old time highway of the water course is the most available one for all points that lie upon it. The sight of regular packets plying up and down is a welcome one to the shippers' eyes.

#### Portland, Oregon.

**CORBETT, FAILING & ROBERTSON.**—Our present writing will close the year of 1899. It is pleasant and most profitable to look back over the past 12 months' business. In the years gone by we have seen prices advance in the staple lines equal to the changes of this year, but we have never seen the percentage realized that we have been able to secure where one has had the nerve to hold a good buy and not try to market at once. It is quite a different proposition whether an advance of \$1.50 per keg comes on top of a price of \$1.25 or \$2.50 for a keg of Nails. We have never seen the staple goods at the low price prevailing in November and December, 1898, consequently where we bought large stocks have realized handsomely on same. What 1900 has in store for us does not belong to retrospect, but a peep through the opening door says beware of a reaction that is bound sooner or later to succeed the expansion we have witnessed in 1899.

Trade holds up well for the season of the year and collections are good, considering the low price of 36 to 38 cents a bushel that A-1 wheat only brings in some sections.

#### Nashville.

**THE GRAY-DUDLEY HARDWARE COMPANY.**—We are pleased to report that there is an active demand for goods in all lines, and prices are being well maintained. Growing confidence in the opinion that the jobbers will not find it easy to replenish existing stocks of general Hardware has a tendency to strengthen prices.

The colder weather which we have recently experienced has increased the sale of such seasonable goods as Coal Hods, Elbows, Heaters, &c., and there is also a fine demand for holiday goods.

The year 1899, now rapidly drawing to a close, has no doubt been the largest and most prosperous year in the history of the Hardware trade. It has certainly been the best in this locality for a great many years, and the prospects for the new year seem encouraging.

With the present high price of iron, coal and cotton, the South should enjoy an abundance of prosperity for some time to come.

#### Omaha.

**LEE-GLASS-ANDRESEN HARDWARE COMPANY.**—Business conditions prevailing in the territory west of the Missouri River, and controlled by the jobbing centers of this region, are much the same as have characterized our reports for some months past, and these conditions have remained unchanged for so long a time that it seems superfluous to repeat that trade continues to be all that could be desired, and really better than ever before in its history. Even for December orders from the country cover well assorted lines of goods, showing that retail dealers are enjoying a steady demand, and no abatement in consumption is at all apparent. Prices of all goods are well maintained, with no disposition whatever to shade the ruling values.

Taking the past year as a whole the general result may be summed up as eminently satisfactory. Not only has the total amount of business transacted been largely in excess of any previous year, but the element of price cutting has to a great extent been eliminated, so that

when the annual balance sheet is completed the showing will undoubtedly prove very acceptable. The outlook for the coming year shows no signs of any serious interruption to the present satisfactory conditions, and it is predicted by some that the year 1900 will equal, if not surpass, the record of 1899.

#### San Francisco.

**MILLER, SLOSS & SCOTT.**—The year of 1899, now so nearly over, has been one of the most prosperous the coast has seen. There have been more Heavy Hardware, Iron and Steel goods handled than for some time.

This month the Christmas trade started in with a lively demand for Christmas goods, particularly in Cutlery, Carvers and Sporting Goods.

The weather still continues rainy, the country now receiving a sufficiency of water, which has been rather scarce for the past two years.

The building trade has received quite a boom, as a great many buildings and residences are now in course of construction in San Francisco.

#### St. Paul.

**FARWELL, OZMUN, KIRK & Co.**—Trade has continued good, and the year closes very satisfactorily. The weather has been favorable for the sale of most lines of seasonable Hardware. Collections are fair.

### Notes on Prices.

**Wire Nails.**—The market has developed no specially new features since our last report. The demand is not heavy, but there is a steady movement from jobbers' stocks, as retailers are purchasing to cover their requirements. Manufacturers' quotations are unchanged, as follows, f.o.b. Pittsburgh; terms, 30 days net:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

**New York.**—The volume of business is not especially large, but there is little reason for complaint in view of the near approach of the end of the year, and the attention which is being given to holiday trade. The market is not entirely even in the matter of prices, which, while firmly maintained by manufacturers, are sometimes more or less shaded under the competition which exists between sellers in view of the fact that Nails purchased at lower prices than are now current are obtainable. Quotations are as follows:

To retailers, carloads on dock.....	\$3.28 to \$3.28
To " less than carloads on dock.....	3.30 to 3.41
Small lots from store.....	3.30 to 3.45

**Chicago, by Telegraph.**—Manufacturers are having about the same moderate volume of business as reported last week. They have advanced miscellaneous Wire Nails 5 per cent. Jobbers also report only a moderate trade, as usual at this season. Prices are maintained on the basis of \$3.28 Chicago for single carload lots and \$3.38 for small lots.

**St. Louis, by Telegraph.**—Jobbers say the sale of Nails has never been so great as during the present prices. No change is observed in the market, but a notable feature is that almost every order for general goods has also specifications for Nails. Prices remain the same, \$3.38, base, St. Louis, for single cars and \$3.43 for small lots.

**Pittsburgh.**—The Wire Nail market continues quiet, only a fair amount of Nails moving. Stocks are being accumulated at the different mills in anticipation of a heavy spring demand. Prices are being almost uniformly maintained, the only unevenness existing being among jobbers, who are shading prices in some instances, to move Nails bought when prices were lower than at present. We quote f.o.b. Pittsburgh; terms, 30 days net:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

**Cut Nails.**—The market price of Steel Cut Nails is represented by the quotation of \$2.50 for carload lots,

f.o.b. mill, but in the Eastern territory the mills are holding to a quotation of \$2.50 for carloads, with freight added from Pittsburgh to point of destination. In some cases, however, quotations have been made in Eastern territory f.o.b. mill, purchasers paying their own freight. Iron Nails are sold at slight concessions from above prices. The tone of the market is fairly firm, but the demand at present is not especially heavy.

**New York.**—With the advance of the season there is a perceptible falling off in the demand for Nails, but the trade are disposed to purchase Cut Nails a little more freely than would otherwise be the case, on account of the difference in price as compared with Wire Nails. The market is represented by the quotation of \$2.65 for carloads on dock, small lots from store being held at \$2.70 to \$2.75.

**Chicago, by Telegraph.**—The demand is of a moderate character and jobbers are maintaining prices at \$2.80 for small lots from stock.

**St. Louis, by Telegraph.**—The sale for certain sizes is increasing, and we may name 3, 6, 8 and 10d. casing, and the same sizes in clinch. Price is about \$2.80, base, St. Louis.

**Pittsburgh.**—The demand for Steel Cut Nails is only fair, but, as noted last week, a good many in the trade are buying Iron Nails at prices slightly less than are charged for Steel Nails. The tone of the market is not as strong as it has been. We quote Steel Cut Nails at \$2.50, base, in carload lots, f.o.b. mill, Wheeling, but Eastern mills are selling on the basis of about \$2.45 to \$2.50, f.o.b. mill, Pittsburgh.

**Barb Wire.**—The domestic demand for Barb Wire is at present light, but manufacturers are anticipating a heavy business in the near future. They are now beginning to accumulate stocks so as to be in a good position to take care of the spring trade. A good deal of Barb Wire is being shipped abroad. Quotations for domestic trade are as follows, f.o.b. Pittsburgh, net cash 30 days:

To jobbers in carload lots, Painted.....	\$3.40
To " " Galvanized.....	3.55
To " in less than carload lots, Painted.....	3.42½
To " " " Galvanized.....	3.57½
To retailers in carload lots, Painted.....	3.55
To " " Galvanized.....	3.70
To " in less than carload lots, Painted.....	3.65
To " " " Galvanized.....	3.80

**Chicago, by Telegraph.**—The factory trade is light, as is usual at this season, although better than in other years. A heavy trade is expected after the holidays. Jobbers also report only a moderate demand for stock. Prices continue as follows: Single cars, Plain Annealed Wire, \$3.18; Painted Barb Wire, \$3.73; Galvanized Barb Wire, \$3.88, with 10 cents advance by jobbers for small lots.

**St. Louis, by Telegraph.**—There is a better movement this week in Barb Wire, and buyers that were scared off by the advanced prices are now presenting their wants. Prices are represented by \$3.78, St. Louis, for single cars of Painted and \$3.88 for small lots, with Galvanized at 15 cents advance on these prices.

**Pittsburgh.**—The volume of trade in Barb Wire for domestic use is small. We quote Barb Wire at \$3.40 for Painted in carload lots to jobbers, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh; terms, 30 days net cash.

**Smooth Wire.**—Owing to the near approach of the new year the trade are purchasing only what they require at once, and the volume of trade is accordingly quite limited. Prices remain firm at former quotations, as follows, f.o.b. Pittsburgh; terms, 30 days net cash:

To jobbers in carload lots.....	\$2.80
To " in less than carload lots.....	2.82½
To retailers in carload lots.....	2.95
To " in less than carload lots.....	3.05

**Pittsburgh.**—The volume of business in Smooth Wire is very satisfactory, considering the season of the year. A heavy spring demand is expected, and mills are stocking up to meet it. We quote: To jobbers in carload lots, \$2.80; to jobbers in less than carload lots, \$2.82½; to retailers in carload lots, \$2.95; to retailers in less than

carload lots, \$3.05, all f.o.b. Pittsburgh; terms net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14, inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, \$1.10.

**Shot.**—No recent change is announced by the Eastern manufacturers of Shot, and the market on the whole remains in substantially the condition it has been for some time. The regular card rate in the East is \$1.45, base, which is subject to an abatement of 10 cents in ton lots, 2 per cent. discount for cash in ten days. As representing the market in the West the following quotations are given as sent out by the Raymond Lead Company, Chicago, under date, December 12; terms, net cash 30 days, or 2 per cent. discount for cash in ten days:

Drop Shot, sizes smaller than B, per 25-pound bag.....	\$1.30
" " " B, " 5- " .....	.35
" " B and larger sizes, per 25-pound bag .....	1.55
" " " 5- " .....	.40
Buck and Chilled Shot, per 25-pound bag.....	1.55
" " " 5- " .....	.40
Dust Shot, per 25-pound bag.....	2.00
" " " 5- " .....	.50

**Horseshoes.**—The advanced prices announced in our last issue, making a base price of \$3.75 on Horseshoes, has gone into effect. It is understood that an advance has also been made on the Burden Shoes, which are now quoted at \$3.70 for the various kinds and sizes. The market has a firm tone, but the volume of business is not especially heavy.

**Wire Cloth.**—The Wire Cloth market is decidedly firm, and most of the manufacturers have sold the greater part of their output for next season. Some of them, however, are understood to be reserving some goods for sale later, when they anticipate that prices will be still higher, owing principally to an anticipated shortage. The market in a general way is represented now by the quotation of \$1.40, but some jobbers are holding at \$1.50.

**Builders' Hardware, &c.**—An advance of about 11 per cent. has been made in the prices of Builders' Hardware, such as Window and Door Trimmings and related goods. This applies to Door Locks, Knobs and Trimmings, in plain and ornamental designs, Door Bolts, Door Butts, plain and ornamental, except the common cast and wrought Butts, Cupboard Catches, Sash Fasteners, Store Door Handles, &c. The manufacturers of these goods are acting together in making this advance.

**Miscellaneous Wire Nails.**—An advance of 5 per cent. has been made in the prices of Miscellaneous Wire Nails, Brads, &c.

**Chain.**—It is reported that serious obstacles have been met in the organization of the Standard Chain Company, which was to embrace 13 or 14 of the different Chain plants of the country. We understand that the consolidation has not been abandoned, but will take considerably longer time to effect than expected, and perhaps may not go through at all.

**Chicago Spring Butt Company.**—Chicago Spring Butt Company, Chicago, Ill., have revised their list prices on the Chicago Spring Butts and Triple End Spring Butts, correcting the disproportions in them. The former are now subject to a discount of 25 per cent. and the latter to a discount of 50 per cent., the change taking effect December 20.

**Glass.**—It is expected that the productive capacity of the country will be in operation by January 2, which will bring new Glass from the American Window Glass Company into the market from the middle to the last of the month. Included are the factories of the American Window Glass Company; those factories which were members of the former combination, but who are not in the new one, and who have been dubbed "orphans," the independents, and the co-operative companies. Many of the two last named plants have been in operation during a part of the present month. Probably some of the American Company's factories will not be operated at all this season.

The American Window Glass Company's carload prices are now 90 per cent. discount on single and 90 and

10 per cent. discount on double strength Glass. Jobbers name the same prices, and by the action of the National Window Glass Jobbers' Association prices are uniform all over the country. No price for less than carloads has been established, and will not be until after new Glass is on the market. Jobbers' stocks are low, and broken in assortment. The local price for the few boxes retailers are buying to keep up assortments is from 80 and 10 to 80 and 20 per cent. discount.

**Paints and Colors.**—*Leads, &c.*—The usual holiday quiet is having its natural effect upon the Paint and Color business. The advance last week of  $\frac{1}{4}$  cent per pound on Lead Products is being fully maintained, and orders are being accepted for 1900 delivery. It is not improbable that Mixed Paints and Colors in Oil will rule higher in price, owing to increased values of raw materials. We quote White Lead in Oil as follows: In lots of less than 500 pounds,  $6\frac{1}{4}$  cents; in lots of 500 pounds and over,  $6\frac{1}{2}$  cents.

**Oils.**—*Linseed Oil.*—The Linseed Oil market shows a little weakness, though there is no quotable difference in prices. It is probable that slight concessions on price could be obtained for spot Oil, which would not be considered for future delivery. The high prices have curtailed buying, while cash at this season is particularly acceptable to the manufacturer. It is possible that prices may be moved up a notch or two before they are lower. In view of the uncertain future of the market buyers are not anticipating their requirements. City Raw Linseed Oil is quoted at 51 cents per gallon in lots of less than five barrels and 50 cents per gallon in lots of five barrels or more. State and Western are held at about 48 cents per gallon.

**Spirits Turpentine.**—There is not much activity in the local market, and buying is restricted to small lots of Turpentine. Prices have fluctuated during the week, and close at  $51\frac{1}{2}$  cents per gallon for Southerns and 52 cents for machine-made barrels.

### A Dinner to Employees.

**S**MITH & HEMENWAY COMPANY, 296 Broadway, New York, will, early in January next, entertain at dinner their traveling force and other employees, together with their wives. The heads of the company will officiate as hosts, and W. T. White, president of the Utica Drop Forge & Tool Company, whose product is marketed by Smith & Hemenway Company, will act as toastmaster. It is intended to have a social occasion of this character annually, Mr. Smith facetiously referring to it as "a good opportunity in which to heal any old scores which may have accumulated during the business year."

## Hardware Organizations.

### North Dakota Retail Hardware Association.

The annual meeting of the North Dakota Retail Hardware Association will take place at Fargo on February 21 and 22 next. Heretofore the proceedings of the annual gathering have been confined to a single day, but the officers of the association, feeling that very much more good will result from a two days' convention, have prepared a more elaborate programme than usual, which they are confident will prove interesting and profitable to the members.

During the past year the association has continued to expand in numbers and influence, and now comprises a large proportion of the Hardware merchants of the State. The members have very generally taken advantage of the privilege of insuring in the mutual fire insurance organization maintained by the Minnesota Retail Hardware Association, which association, with the North Dakota and Wisconsin bodies, comprise the Northwestern Hardware Association.

The secretary of the North Dakota Association is C.

N. Barnes, Grand Forks, who will be pleased to respond to inquiries respecting the coming meeting.

#### New England Hardware Dealers' Association.

The monthly meeting of the New England Hardware Dealers' Association held at the United States Hotel, Boston, Wednesday, December 13, took the form of the Seventh Anniversary of Ladies' Night, which is a popular annual feature. The meeting was the largest ever held by the association, the attendance being 125, including more than 50 ladies.

An enjoyable reception was held in the parlors from 4 to 5.30 o'clock, after which dinner was served in the large banquet hall. During the dinner the Westminster String Trio, Miss Annie Frank Libby, harpist, furnished music, and at the conclusion of the banquet President William D. Parlin delivered an address of welcome, and introduced ex-President Samuel H. Thompson of Lowell, who responded to the toast, "Our Lady Guests."

At the request of the president, Mr. Thompson, as chairman of the Entertainment Committee, assumed charge of the meeting, and in very appropriate and felicitous remarks introduced Mrs. Julia Ward Howe, president of the New England Women's Club.

Mrs. Howe was greeted with great enthusiasm, the audience rising and singing her "Battle Hymn of the Republic," to which Mr. Thompson had referred in his address, stating that it was during her visit to Washington with her husband and friends in 1861 that the idea of this hymn was conceived and the verses written. Mrs. Howe is now 80 years of age, but her vigor and power as a public speaker are undiminished, and her address was splendidly delivered and well received.

The next speaker on the programme, Rev. Sarah Dixon of Tyngsboro, Mass., was to have made an address on "A Plea for Prospective," but owing to a sudden temporary illness was unable to do so, although she was present during the early part of the evening.

Webster R. Walkley of New York, who on a previous occasion talked to the association, was called upon to close the post prandial exercises, and made one of his characteristic and eloquent addresses, taking for his subject, "Our Duty to the Republic," during which he referred to the position and influence of New England. Mr. Walkley greatly stirred the audience by reciting a patriotic poem, "Up With the Flag." At the close of his address he was tendered a vote of thanks.

The meeting then adjourned, all present joining in singing "Auld Lang Syne."

Undoubtedly this was the most successful Ladies' Night ever held by the association, and the perfect arrangements reflect great credit upon the Entertainment Committee, Samuel H. Thompson, Bion C. Pierce and D. Fletcher Barber, and the Reception Committee, Austin H. Decatur, Elisha J. Neale, Edward A. Loomis, John H. Sayward, William E. Plummer, George J. Mulhall. Both committees were assisted by the indefatigable and enthusiastic secretary, James A. Farless.

There being no meeting in January, the annual election will take place as usual in February, and President Parlin appointed the following committee to nominate officers for the coming year, excepting president: Samuel H. Thompson, Hiram G. Janvrin and Anthony S. Morss. George J. Mulhall, William H. Warren and Henry S. Sanders are the Committee of Entertainment for the February meeting.

#### Missouri Retail Stove and Hardware Dealers' Association.

E. Thomas, Trenton, Mo., secretary of the Missouri Retail Stove and Hardware Dealers' Association, has sent out the following circular letter to all retail Hardware dealers in towns of 500 or over, in which it will be observed that announcement is made that the annual meeting of the association will be held at St. Louis on February 6 next:

This communication is addressed to you for the pur-

pose of getting your attention and asking you a few leading questions. How is your business? Is it satisfactory? Are there any evils in your line that need correcting? If so, are you willing to assist in their correction?

If so, please send your name to E. Thomas, secretary of the Missouri Retail Stove and Hardware Dealers' Association, accompanied by the membership fee of \$3, and then make your arrangements to attend the next meeting of the association in St. Louis on Tuesday, February 6, 1900, and assist in perfecting plans looking to the general welfare of the retail dealers of the State.

You are equally interested in this movement. The next meeting will be of vital importance, and now is the time to act. Now is the time to lend the assistance that will benefit you. Do not wait for further notice, but act upon receipt of this communication, so that the secretary can enroll your name and arrange for the accommodation of the next meeting of the association.

It is estimated that there are from 1000 to 1200 retail Hardware dealers in the State. There should be that many members of the Missouri association. Such a membership would prove of great benefit to the retail interests, and you are appealed to to constitute yourself a committee of one to go to work at once in this work and make it a success.

Please write the secretary by return mail, and give him your name, and don't forget the \$3. If you cannot or will not join, please state your reasons. Inclosed please find blank application.

The Executive Committee of the association have adopted the following resolution, by which certain traveling salesmen are empowered to act as solicitors and receive applications for membership and collect the membership fee:

*Resolved*, That the traveling representatives of the jobbing houses of Simmons Hardware Company, Shapleigh Hardware Company, Witte Hardware Company, Wyeth Hardware & Mfg. Company, Richards & Conover Hardware Company, Townley Metal Company, Hibbard, Spencer, Bartlett & Co., Wells & Nellegar Company, C. Sidney Shepard & Co., National Enameling & Stamping Company, Standard Stamping Company, Padock-Hawley Iron Company, Sligo Iron Store Company, Beck & Corbitt Iron Company, Buck's Stove & Range Company, Charter Oak Stove & Range Company, Bridge & Beach Mfg. Company, Ringen Stove Company, Majestic Mfg. Company, Thomas White Stove Company, Shannon-Emery Stove Company, Comstock & Castle Stove Company, and all traveling salesmen who are members of the Missouri Retail Stove and Hardware Dealers' Association, be and are hereby empowered to receive applications for membership and collect a membership fee of \$3 and forward same to E. Thomas, secretary of the association, at Trenton, Mo.

For each application that is accompanied by a fee of \$3 and forwarded to the secretary by any of the traveling salesmen for the above named firms, said solicitor shall be allowed to retain 50 cents out of the membership fee for his services as said solicitor. Each application must contain the name of the solicitor.

#### New England Iron & Hardware Association.

The New England Iron & Hardware Association held their regular monthly dinner at Young's Hotel, Boston, on Monday, December 18. The attendance was large and it was voted to hold their annual banquet as soon after January 1 as convenient, the date to be determined by the engagements of men of prominence whom they wish to invite to address them.

The new counsel of the association, Messrs. Williams and Copeland, were presented to the members, after which John S. Concannon, who is at the head of the Civil Service Bureau, delivered an interesting and instructive address on "Legislative Interference with Boston."

The last notice sent out called attention to the change in the address of the rooms of the association, which are now located in the Mason Building, 70 Kilby street, where they have much more roomy and convenient quarters in charge of Manager E. L. Haley and a corps of assistants.

The four great departments of this association, viz., Shelf Hardware, Heavy Hardware, Metal and Wooden Ware, embrace most of the jobbers in these lines in New England east of the Connecticut River. The association now has upward of 70 members and is in a flourishing condition.

### A Plea for Better Goods.

FROM a gentleman who is familiar with the subject of which he writes we have the following communication, in which he touches upon the deterioration in the quality of Builders' Hardware and the desirability, with better business conditions and higher prices, of having an improvement in this respect:

Possibly few outside the manufacturers of Builders' Hardware, and more particularly of House Trimmings, realize the deterioration in quality which has taken place during the last few years. The decline in quality arising from accelerated production or the desire on the part of the manager and foreman to turn out as many goods as possible in the fewest hours, and with the least possible number of employees, has been so gradual that it has not called forth a protest except in a few instances. One reason the protest has not been more general is that the jobber, his buyer and the larger retailers nowadays seldom come in contact with the goods themselves in their stock, being so busy with other matters which they consider more important; the jobber relies upon the retail dealer, and the retailer upon the artisan to call their attention to any defects in workmanship or material.

Some of the old guard among the Hardware trade reason that in earlier days the jobbers' and the retailers' employees were expected to call the attention of their superiors to what seemed to them inferiority in, or lack of, quality, but it is seldom expected now, at least is seldom done, since it has become an old story to have a superior reply, when his attention has been called to it, "That is all right, this lot did not cost as much as the last."

This whole matter, which the manufacturer and his workmen in a majority of instances deprecate, has arisen from the demand for lower priced goods, beginning with the consumer and extending on and up through the retailer and jobber until it has reached the maker.

The price has been the main factor in trade during the recent years of depression; more time has been spent in haggling over the price than in inspecting the quality and finish. As long as the jobber and retailer could purchase the same number, quality or brand at a gradually declining price they were entirely satisfied.

If the matter of deterioration in quality in proportion to the concession in price occurred to them, it was banished by the thought that price had apparently taken complete possession of their customers and was the only subject that seemed to have their consideration.

Every time the jobber, to please his customers, demanded a concession in price of a standard or reliable manufacturer, because some other manufacturer was willing to slight his product and make a reduction on goods which he said were of the same quality, the buyer seemed to overlook that it meant an order being issued to the factory to cheapen the goods, if possible, to equal the concession granted.

If any buyer not thoroughly conversant with the matter will take the trouble to examine his stock, he will find, in comparison with the goods purchased a few years ago, he has been getting no more than he paid for, and that the oft repeated saying, "Something for nothing is a fallacy," is still operative in the business world.

Now that the buyer is compelled to pay an advance of 45 per cent. over quotations of a year ago, may he not confidently expect that there will be a considerable improvement in the quality and workmanship of the goods?

The consumer has found from his experience that in the great majority of instances when he pays a low price he gets trash, goods that lack durability and quality, and that from month to month it becomes more

noticeable that he is willing to pay higher prices if he can be satisfied that there has been an improvement in quality commensurate to the advance in price.

Let the manufacturer produce goods whose intrinsic value is what he asks for them, insisting upon their quality being called to the attention of the trade, and there will be little trouble in maintaining prices which will be more satisfactory to all concerned.

### Malcolm Graham.

MALCOLM GRAHAM of the firm of Hartley & Graham, New York, died December 19 at his country seat on the Rumson Road, near Seabright, N. J. Mr. Graham was taken ill with typhoid fever early in September, so the family did not return to their city home as usual in the fall. The patient never rallied from the effect of the fever and death was caused by physical exhaustion.

Mr. Graham was born in 1832 in this city. His father, John Lorimer Graham, was in his day a prominent lawyer and at one time postmaster of New York.

Malcolm Graham began his business career as a clerk with Smith, Young & Co., and about 1853 joined Marcellus Hartley and J. R. Schuyler in forming the firm of Schuyler, Hartley & Graham, 17-19 Maiden Lane. Previous to the Civil War, which brought them a great deal of business, the firm dealt in a large variety of goods other than Arms and Ammunition, which they have long since ceased to handle. About ten years ago they moved to 313-315 Broadway, where they now are.

Mr. Graham was always identified with the counting room part of the business, and gave little if any attention to the details of manufacturing or marketing goods. He was secretary of the Union Metallic Cartridge Company, Bridgeport, Conn., and vice-president of the Remington Arms Company, which with the Bridgeport Gun Implement Company are Hartley & Graham properties.

Mr. Graham was an excellent type of the old school of merchants, gentle, courteous and considerate, of a very retiring and unostentatious disposition and possessed of keen intuition in whatever concerned probity and commercial honor. He loved art, pictures, &c., and devoted himself in great measure to his family, charities and church, and although a member of many leading clubs, seldom visited them. He was an honored member of the Metropolitan, Union League, Manhattan, Riding, Union, Century, Calumet, Lawyers', New York Yacht and Seawanhaka-Corinthian Yacht clubs.

Mr. Graham's first wife died in 1872, and four of their children survive him. In 1876 he married the widow of Benjamin M. Whitlock, a prominent merchant, who also survives him.

He was for many years an active member and elder of the Fifth Avenue Presbyterian Church, New York, and was also a member of the Chamber of Commerce and St. Andrew's Society.

At a largely attended and representative meeting of the members of the Gun and Sporting Goods trade of this city, held in the office of the Winchester Repeating Arms Company, the following resolutions were unanimously passed, and a committee appointed to transmit them in proper form to the family:

Forasmuch as it hath pleased Almighty God to remove from us our esteemed associate, Malcolm Graham,

Therefore, we desire to bear testimony to his worth and to give expression to our high estimation of his character, as indicated in all the relations of business life.

His connection with the firm of which he died a member antedates the memory of nearly all his present business associates. We have looked up to him with respect and regard as a man of spotless integrity and honor. We have ever found him kind and considerate, and desire to unite in this expression of regard and sympathy.

SAMUEL R. BROWN, who has been for some time past with the Standard Drop Forging Company, Boonton, N. J., is now connected with E. H. Kellogg & Co., manufacturers of Machinery Oils, 244 South street, New York.

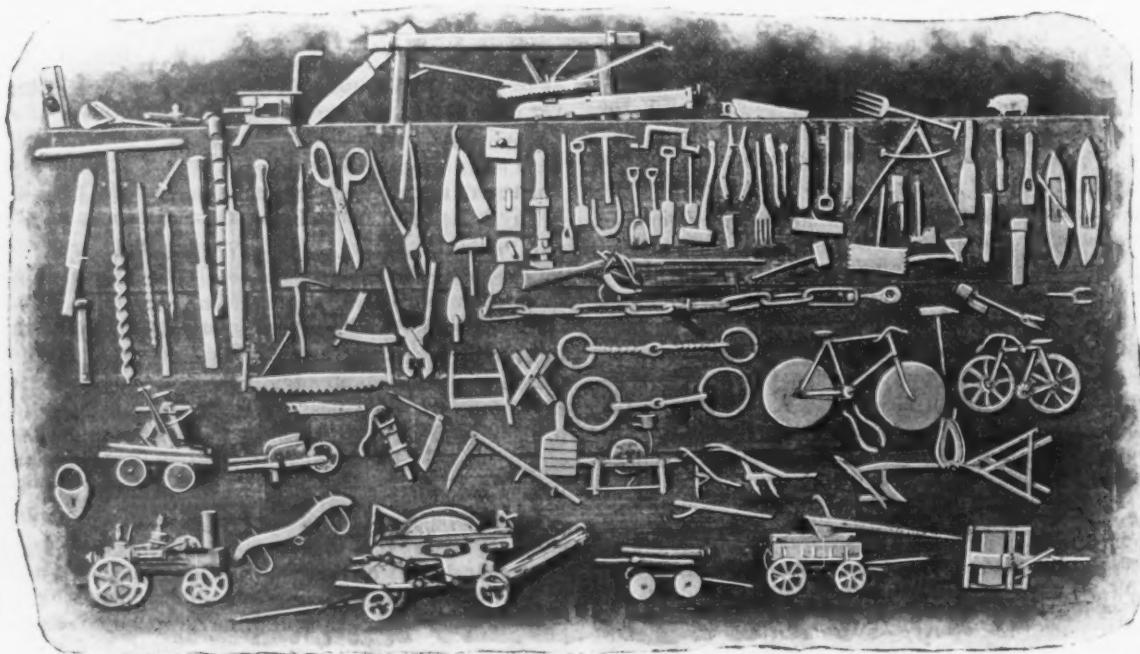
### The Whittler's Paradise.

The accompanying illustration relates to a unique display which recently appeared in the show window of William Sterne & Co., Owensville, Ind., who carry General Hardware, Stoves, Tinware, &c. During the rainy days and long winter evenings customers would gather around the store to swap stories and gossip and discuss topics of common interest. On one of such occasions a member of the party whittled out a Scythe and Snath. That fired the ambition of the party, and from this beginning grew a collection of 25 pieces, whittled with Pocket Knives from soft pine box lids. These were assembled on a board, such as Planished Iron is packed with for shipment, and the display placed in one of their windows. It attracted considerable attention from pedestrians, especially as they became interested in noting the

filled concerns out of it. After a season prosperity spoils some of the light weights, which leads to more trouble, but after three years of trial the organization is still a fact and working with results which are satisfactory to the manufacturers. The narrative does not trace the history to the point sooner or later reached when disaster overtakes the pool.

### A New Shovel Plant.

HAVANA METAL WHEEL COMPANY, Havana, Ill., have completed the buildings comprising their Shovel plant, and are now receiving and installing the necessary machines for the manufacture of Shovels and Spades. Their steam plant, consisting of four boilers, 225 horse-power, and four engines, is nearly ready to run. All their machines are of the latest patterns for the making of Shovels and Spades, and also Shovel



An Exhibition of Whittling.

different articles added from time to time by the deft fingers of the ingenious whittlers. The display covered a space 28 x 60 inches, and was instrumental in directing attention to the business of the firm.

### History of a Pool.\*

DAVID WILLIAMS COMPANY, 232-238 William street, New York, have just published in pamphlet form the "History of a Pool," which appeared some months ago as a serial in the columns of *The Iron Age*. In the form of a narrative its 20 chapters describe in detail one of the methods of promoting and carrying on a combination or pool, and is a contribution to the discussion of the momentous question concerning measures manufacturers resort to for protection from the effects of excessive competition.

In a chatty way it shows how the president of a manufacturing company in a New England town was approached by a competitor in the same line of product, his aversion to combination and final surrender to the business logic of his caller. The plan of having a gentlemen's agreement merely was discarded for a more practical one on a financial base. Then a provisional committee called on the other makers of the same goods, and in due course an organization and working arrangement was perfected. After some progress was made the inevitable difficulties develop, which require tactful handling. Then disintegration sets in and part of the manufacturers form a second pool with some dissatis-

\* "History of a Pool." By David Williams Company, 232-238 William St., New York. Price 2 cents.

Handles from the ash log, as the company will use their own sawmill to cut the logs in shape for their Handle machines. They expect to place samples of their product in the hands of the trade early next spring. If the jobbers refuse to handle their goods, they are intending to work the retail trade direct with their other lines.

### L. S. Starrett Company's Catalogue.

THE L. S. STARRETT COMPANY, Athol, Mass., in issuing Catalogue No. 16 of Fine Mechanics' Tools, call attention to the following new Tools which are illustrated and described: Combination Squares, with hardened blades; new style Combination Square No. 17, Carpenters' Square, Center Square, Pocket Slide Caliper, Micrometer Gauge No. 24, 12 to 36 inches; Micrometers, with finger ring; Micrometers, with ratchet stop; attachment for converting a 2-inch into a 1-inch Micrometer; Micrometer No. 127, 0 to 12 inches; inside Micrometer, 32 to 107 inches; Thickness Gauge No. 172, Inspectors' Gauges, Little Giant Jack Screws, complete line of Hack Saws, Universal Surface Gauge No. 57, Screw Adjusting Calipers, Double Calipers, Carpenters' Dividers No. 92, Stair Gauge Fixtures No. 111, Trammels No. 59, Drill and Tap Gauges. Changes and improved designs are noted in connection with No. 11 Squares, No. 9 Sets, No. 1 Cutting Nippers, No. 47 Bevels, Nos. 120, 125 and 126 Inside Caliper Gauges and Nos. 26, 36 and 38 Calipers. Attachments have also been added to No. 360 Protractor and No. 66 Guide Liner, besides increasing the number of sizes of several Tools. All Rules, Gauges, &c., with graduations may be obtained in metric as well as English measure. Some changes in prices are also noted.

W. D. Crisler, Hardware and Stove merchant, Rose, N. Y., is now erecting a new building for his business, which will be larger and more convenient than his present quarters.

## The Continental Tool Company.

THE CONTINENTAL TOOL COMPANY, Frankfort, N. Y., have been incorporated for the purpose of manufacturing Agricultural Implements, including Forks, Hoes, Rakes, Shovels, Scoops, Spades &c. The officers of the company, all of Utica, are as follows: W. T. Baker of the *Saturday Globe*, president; W. H. Roberts, Roberts Hardware Company, vice-president; E. B. O'Dell, John A. Roberts & Co., secretary; W. W. Roberts, Roberts Hardware Company, treasurer. They, together with David Murray, J. R. Lewis, H. W. Roberts, D. W. Morris and H. C. Sholes, constitute the Board of Directors. The company have secured lease of the buildings formerly occupied as shops by the West Shore Railroad, at Frankfort, N. Y. The structure to be used as a forge shop is 350 feet long, 125 feet wide and 60 feet high. E. L. Senif, recently with the Geneva Tool Company, has been engaged as foreman of this department. He is a man of long experience in the manufacture of Steel Goods, having been employed in several of the leading plants of the country. The company have, we are advised, placed contracts for materials enough to carry them through the coming year. About \$50,000 worth of machinery is also under contract for delivery during January. About 200 men will be employed from the start. A 300 horse-power Harris-Corliss engine is now being placed, and the company expect to be in a position to put their product on the market by February, in time to secure a share of the spring trade. The aim of the management is to put out the best quality of goods. The company state that they are entirely independent and in no way connected or affiliated with any combination. The new enterprise is referred to as starting upon a substantial basis, and not hampered for need of funds, the gentlemen interested being men of large means.

## Price-Lists, Circulars, &c.

THE ALASKA REFRIGERATOR COMPANY, Muskegon, Mich.: Two catalogues of Refrigerators. The larger comprises 88 pages and is devoted entirely to household Refrigerators and Ice Chests. The line presents a large variety, from the smallest and plainest construction to very large Refrigerators or ornamental sideboard constructions. The smaller catalogue, 48 pages, is devoted to Refrigerators for the use of grocers, butchers, florists and others who need cooling apparatus of special character or large size. All the Refrigerators turned out by this company are made of hard wood, and special attention is paid to decorations either in the line of carving, ornamental panels or artistic Hardware.

THE BUCHANAN SCREEN WORKS, Hillsdale, Mich.: Catalogue of Screen Doors and Window Screens. This is a handsome publication of 20 pages, illustrating the various styles of Screen Doors and Window Screens offered by this company to the trade. The Doors are of various styles, from a plain pattern to an exceedingly ornamental design. The Window Screens shown comprise the improved Hillsdale Adjustable Spring, the Columbia Improved Center Extension, the Buckeye Center Extension and the Shankey Adjustable Sliding Window Screens. The company are also manufacturers of high grade Axe Handles.

THE GURNEY REFRIGERATOR COMPANY, Fond du Lac, Wis.: Catalogue of the Gurney Patent Refrigerators. The catalogue presented by this company for the coming season presents a full line of domestic Refrigerators, Grocers' Boxes, Refrigerator Sideboards, Ice Chests, Cooling Rooms, Water Coolers, &c. The Gurney Refrigerator is made with a removable patent galvanized ice compartment, which is so placed in the Refrigerator that the side walls and both end walls make an additional condensing surface to that of the ice itself.

MONARCH REFRIGERATOR WORKS, Green & Smith, proprietors, Burlington, Vt.: Illustrated catalogue and price-list of Monarch Dry Air Refrigerators for 1900. The line shown includes Domestic, Sideboard, Water Cooler and Grocers' Refrigerators, Ice Chests, &c. The flues next the ice are removable for cleaning. In addition the Refrigerators are provided with a movable front base or flap, flush floor to provision room; corrugated, galvanized iron provision shelves and ice racks; solid brass or bronze lever locks, butts and cup stands, porcelain lined iron cooler tanks, &c. The goods are made of ash, finished antique, with some styles in soft wood.

HERMANN BOKER & Co., 101-103 Duane street, New York: A unique circular in cardinal red, printed in color, calling attention to their Full Moon and Baldwin Acetylene Gas Lamps for Bicycles, &c.

EMPIRE FORGE COMPANY, Lansingburg, N. Y.: Pamphlet calling attention to their Twentieth Century Sheet Steel Sash Pulleys.

## Trade Items.

NICOL & CO., manufacturers of Novelties, 55 and 57 West Washington street, Chicago, offer a large line of useful articles and metal toys which are suitable for the Hardware trade. These goods comprise Curling Irons in various styles, Comb Curlers, Pinching Irons, Crimping Irons, Curling Pokers, Curling Iron Heaters for gas or oil lamps, Drop Light Stands, Lamp Stoves, Iron Puzzle Savings Banks, in the form of safes, pails, barrels, &c., Toy Trucks, Toy Sad Irons, Trick Keys, Match Safes in novel forms, Ash Receivers, Bill Files, Inkstands, Nut Cracks, &c. The firm have in preparation a catalogue of their full line, to comprise about 80 pages, which will shortly be ready for distribution.

THE SPECIAL NOTICE signed "Howard" is commended to the attention of Hardware merchants in New York City or nearby territory who desire to dispose of an interest in their business or sell it out entire. The advertiser is a gentleman of wide experience, who is well and favorably known in the trade.

THE NEWMAN & CAPRON HARDWARE COMPANY, Incorporated, have succeeded the former firms of Newman & Capron and A. G. Newman, and will continue the manufacture of all kinds of Builders' and Railway Hardware, Special Metal Work, Bank and Office Fittings, &c., with factories and salesrooms at 157-163 West Twenty-ninth street, New York. The officers of the company are Frederic W. Hunter, president; Augustus S. Newman, treasurer, and Merritt E. Haviland, secretary, and the directors are Frederic W. Hunter, Augustus S. Newman and Wm. V. Newman of New York, James W. Kean of New Jersey, and Gardner W. Kimball of Wilmington. Mr. Hunter was formerly treasurer and secretary of the American Car Improvement Company, and also the executive officer and treasurer and secretary of the Railway Equipment Corporation, both of which companies he incorporated and managed. Augustus S. Newman and Wm. V. Newman are sons of A. G. Newman, deceased, and are surviving partners of Newman & Capron. The factory has been entirely overhauled and remodeled, largely increasing its capacity and facility for turning out goods. It is expected the factory will be in complete running order by January 10 next. A handsome salesroom, 65 x 80 feet, finished in hard wood, is to occupy the entire front of the building.

J. V. Z. ANTHONY, who for four years has been the buyer and head of the department of Cycle Accessories and Sundries of Hartley & Graham, has resigned his position with that house to assume full charge of the Bicycle business of C. B. Barker & Co. The latter concern have just moved from 70 West Houston street to 93 Reade street, New York, where they have the entire building, including five stories and two basements. When Mr. Anthony severed his connection with Hartley & Graham, the employees of the old house presented him with a fine mantel clock set with side and top bronzes as a token of their esteem for him.

GEO. W. TROUT & Co., Chicago, will remove January 1 into the old Wm. Blair Building, 176 Lake street. They will greatly extend their business, having over three times the space now occupied by them at 168 Lake street. They will retain all their manufacturers' agencies, but will hereafter pay principal attention to the jobbing business. They are adding all the goods necessary to enable them to carry a complete line of Shelf Hardware.

AMONG the Special Notices in this issue is one in which William A. Morrison, Tampa, Fla., offers his Hardware and Crockery business, established 15 years ago, for sale. This opportunity, particulars in regard to which are given, is one which would seem deserving of attention from those looking for an investment of this sort.

R. R. Campbell, Macomb, Ill., has sold an interest in his business to his brother, John Campbell, and Cornelius Bailey, and the style is now Campbell Bros. & Bailey.

The store of J. C. Munn, at Bonham, Tex., was robbed of \$150 worth of goods a short time since. The thief was apprehended within seven hours after the robbery, and all of the goods recovered.

T. L. Mullins has purchased the Hardware, Stove, Farming Implement and Sporting Goods business of Ratchford & Mountain, at Aubrey, Tex. Mr. Mullins will make a specialty of Builders' Hardware and House Furnishings.

Andrew and Wallace Dewoody have purchased the business of Nash & Tucker, Coggen, Iowa, and will continue it under the style of Dewoody Bros. They expect to discount all bills.

### Among the Hardware Trade.

J. A. Marsh has succeeded Mize & Marsh, dealers in Hardware and Farming Implements, Ainsworth, Iowa. Mr. Marsh has added the sale of Tinware to his other lines.

The Hammerly Hardware Company, Iuka, Miss., have been incorporated with a capital stock of \$3000, and the following officers: Geo. P. Hammerly, president, and E. T. Hammerly, secretary and treasurer. The company are successors to Geo. P. Hammerly, who has been engaged in business in Iuka since 1858. The concern are doing a cash business, and report increased sales for 1899, with excellent prospects for the future.

E. M. Rauch, Pomeroy, Wash., dealer in Heavy Hardware, Agricultural Implements, Sporting Goods, Blacksmiths' Supplies, &c., has enlarged his store and rented adjoining premises, where he will carry a general line for farmers' requirements.

Jones & James, Garland, Tex., retailers of Shelf Hardware, Agricultural Implements, &c., have lately added a line of Cook Stoves.

The store of A. L. Cockrum, Orlando, O. T., was robbed of \$200 worth of goods on the 23d ult. Mr. Cockrum is intending in the near future to open a branch business at Billings, and is now putting up a stone building with pressed brick front for this purpose.

L. P. Bowr has opened up in the Hardware business at Tiverton, Ohio.

Moore & Weatherby, Addison, N. Y., have dissolved, and their successors are Geo. H. Weatherby of Addison and Henry T. Albee of Galetown, Pa., who will continue under the firm style of Weatherby & Albee.

Johnston, Beyer & Co. have lately embarked in business at Rural Valley, Armstrong County, Pa. They are wholesale and retail dealers in Hardware, Tinware, Stoves, Agricultural Implements, Gas Fixtures, Wagons, Buggies, Sporting Goods, Mining and Contractors' Supplies, &c. The members of the firm are L. W. Beyer, M. M. Beyer and J. J. Johnston, late with J. F. Barber & Co., Phillipsburg, who will act as manager.

Geo. Price and Chas. Blanchard have purchased the business of W. H. Prescott, Ticonderoga, N. Y., and will continue at the old stand under the style of Blanchard & Price.

Peery & Smith are successors to Peery, Smith & McNath, at Seymour, Tex.

Hoyt & Galloway, Middletown, N. Y., have dissolved, and the style is now G. W. & J. H. Galloway.

Ruthton Hardware Company is the style of a new house at Ruthton, Minn.

G. H. Miner, Cranbrook, B. C., has opened a branch store at Moyie.

W. F. Graves, Castile, N. Y., lately acquired a stock of Stoves, Hardware, &c., at bankrupt sale.

Henry Woodruff has succeeded Woodruff Bros., Burns City, Ind.

F. D. Copsey has succeeded R. V. Hunter in the Hardware, Stove and Sporting Goods business, at York, Neb.

Dickerman Hardware & Supply Company, Wallingford, Conn., have just taken possession of larger and more convenient quarters. Their business outgrew their former location.

Triggs Hardware Company have purchased the business formerly conducted by John J. Hoffert, at Lake Park, Iowa.

Webster & Case, successors to Higgins & Webster, Warsaw, N. Y., have purchased the Walker Block, and will adapt it to the requirements of their business. They expect to occupy the new quarters about March 1, 1900.

The store of McGibbon & Tarbox, Hancock, N. Y., was recently destroyed by fire, with damage on stock of \$15,000, and insurance amounting to \$3300. The fire is supposed to have been the work of burglars.

E. E. Holmes & Co., Johnson, Vt., have enlarged their establishment by the erection of a building 15 x 38 feet, two stories high.

A. T. Phelps has succeeded A. T. Phelps & Co., dealers in Hardware, Stoves and Groceries, Steelburg, Neb.

Geo. K. Swett, formerly identified with C. H. Goss in the Hardware business at St. Johnsbury, Vt., has opened a store under his own name.

W. E. Ryan & Co., Springfield, Tenn., are remodeling their store. Among the improvements are new shelving, with display doors, rolling ladders, &c.

Haas & Huebsch, Le Mars, Iowa, owing to inadequate facilities have taken in an adjoining storeroom, and are thus in better position than heretofore to handle their growing business in Shelf Hardware, Stoves, Tinware, Sporting Goods, &c.

Jackson & Burkholder have succeeded Jackson & Groat, at Woodbine, Iowa.

Messrs. Allen and Hull have consolidated their stocks in Highland, Kan., under the style of Allen & Hull. Their line comprises Hardware, Farming Implements, Stoves, Seeds, Furniture, &c.

D. O. Carroway is successor to D. O. Carroway & Co., at Edna, Tex.

T. J. Randolph is successor to T. J. Lund, Wallingford, Iowa.

Geo. De La Porte has sold his interest in the firm of De La Porte & Co., Laddonia, Mo., and the style is now De La Porte & Lofton.

L. H. Valentine and Fred. V. Gale of Oregon, Ill., have purchased the store of the late J. H. Coyne, at Creston, and will continue the business at the old stand under the style of Valentine & Gale. The stock purchased comprised General Shelf and Heavy Hardware. The new proprietors purpose adding a full line of Agricultural Implements, Buggies, Wagons, Wind Mills, Tanks, &c.

M. J. Hubbard, Alcester, S. D., has lately moved into his new two-story brick veneered building.

### Requests for Catalogues, &c.

C. F. COMER & CO., Calgary, Alberta, Northwest Territory, have recently established themselves in business. Their line covers Hardware, Stoves and Sporting Goods, as well as House Furnishing Goods, Blacksmiths' Supplies, Paints and Oils, &c. The new firm will be pleased to hear from manufacturers with catalogues, price-lists, &c.

Revere Hardware Company, Revere, Mass., have been incorporated under Massachusetts laws, with \$5000 capital paid in, and will continue and enlarge the business of A. V. Andrews & Co. The new company request copies of manufacturers' catalogues and other printed matter.

J. S. Kenyon, manufacturers' and jobbers' commission agent in Hardware and Builders' Supplies, Providence, R. I., advises us that he would be pleased to hear from manufacturers and jobbers in regard to handling their lines in Providence and vicinity.

### Miscellaneous Notes.

#### Hack Saws.

C. E. Jennings & Co., 101 Reade street, New York, are now manufacturing a steel adjustable extension hack saw frame, known as No. 175, which they refer to as having special merit. The frames are nickel plated, well finished, strong and durable, with no loose pins to drop out or springs to get out of order, and are quickly and easily adjusted to four angles, or to any lengths of saw, from 8 to 12 inches inclusive.

#### Bell for Automobiles.

The Starr Bros. Bell Company, East Hampton, Conn., manufacturers of bicycle, sleigh and door bells, will soon bring out a new bell for automobiles, which will be a 3½-inch gong bell of attractive form and adapted for attachment to the vehicle, so as to be operated by the foot.

**Tea Cup Measure.**

Keen & Hagerty Mfg. Company, Baltimore, Md., are putting on the market a standard teacup measure, made of tin, which is illustrated herewith. The demand for

*Culinary Tea Cup Measure.*

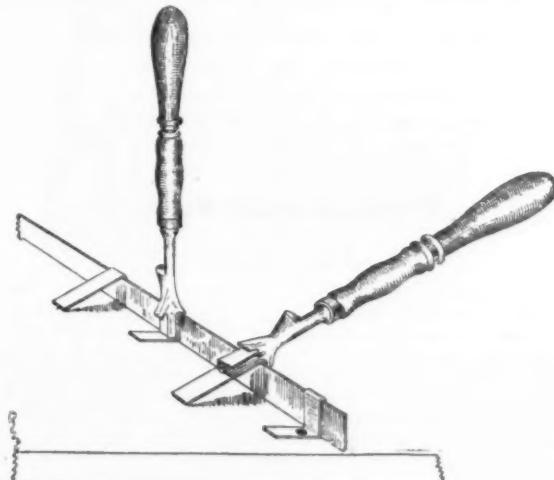
such an article is occasioned by the fact that quantities in recipes are invariably expressed in multiples or parts of a teacup, while the diversity in the capacity of teacups in everyday use causes uncertainty and confusion. This is offered as a standard measure based on the teacup most commonly used, and is so marked as to indicate accurately quantities of one-quarter, one-third, one-half, two-thirds, three-quarters and one teacup.

**Danzer's Roofing Cleater and Nailer.**

Peck, Stow & Wilcox Company, Southington, Conn., and 27 Murray street, New York, are manufacturing

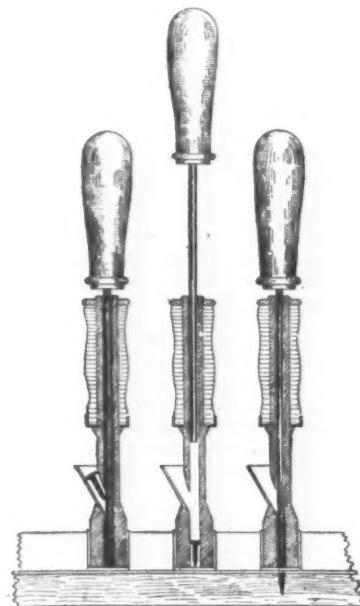
*Fig. 1.—Danzer's Rapid Roofing Cleater and Nailer.*

Danzer's rapid roofing cleater and nailing, here illustrated. This is a tool for quickly hooking and bending cleats or braces on standing lock roofing without injury

*Fig. 2.—Hooking and Bending the Cleat at Right Angles.*

to thumb or fingers, the various operations being clearly shown in the cuts. The device weighs  $2\frac{1}{4}$  pounds, is  $13\frac{1}{2}$  inches long, closed, and has a rod or plunger  $8\frac{3}{4}$  inches long to the handle. Fig. 1 represents the tool

complete. In Fig. 2 the tool is shown first in the act of hooking the cleat over the standing lock, and bending it at right angles, and then with the cleat ready to be fastened by driving a nail through it into the roof to brace and strengthen the upright lock. In use the tool is hooked over the roofing, a quick movement bending the cleat at right angles to the roofing and sheathing, when the plunger is raised and the nail, which has been placed point down in the funnel shaped pocket on the side, is driven to place by a downward stroke of the

*Fig. 3.—Showing Operation of Nailing Cleat.*

ram. It is suitable for tin and sheet metal roofs, and will nail flat seam roofs rapidly and well. In ordering care should be taken to indicate whether the tool is wanted for common (1 inch) or wide ( $1\frac{1}{4}$  inch) gauge standing seam.

**The Saxon Detachable Mud and Skirt Guard.**

An illustration is shown herewith of a guard for use on bicycles, manufactured by the N. A. Saxon Company, Chicago, for whom the T. H. Cranston Company, 58 Wabash avenue, Chicago, are sales agents to the jobbing trade. The guard can be easily adjusted to any kind of bicycle, and after having once been adjusted it can be taken off or put on in a few seconds. The main

*The Saxon Detachable Mud and Skirt Guard.*

purpose of the guard is to make the work of cleaning a ladies' wheel an easy operation, while a stationary guard makes this work difficult and awkward. The Saxon guard can be entirely removed without undoing a single nut or screw, and will not only be found a convenience for ladies' wheels, but will be appreciated by men who ride in muddy weather.

T. O. Flowers has withdrawn from the Rock Hill Hardware Company, Rock Hill, S. C., and is no longer manager of that concern. Mr. Flowers is now president and general manager of the Rock Hill Supply Company, who are dealers in Hardware, Crockery, Stoves, Farming Implements, Building Materials, Machinery Fittings and Mill Supplies. The other officers of the latter company are J. S. White, vice-president, and J. W. O'Neal, secretary-treasurer.

**Black's Incandescent Vapor Lamp.**

Meriden Bronze Company, Meriden, Conn., and 30 Park place, New York, are manufacturing Black's incandescent vapor lamp in a variety of styles, one of which is here shown. Ordinary gasoline, Nos. 74 or 76, is used in the spherical tank above, the latter being thoroughly tested and guaranteed against leakage. A lighter or torch accompanies each lamp and consists of a perforated metal cylinder about  $\frac{1}{2} \times 2\frac{1}{2}$  inches, packed with asbestos, through which a wire rod passes with a hook at the end. To light the burner, the asbestos filled cylinder is dipped in wood alcohol and hung just below the burner after ignition, which warms the burner and vaporizes the fluid, so that in about half a minute the key can be turned and the burner lighted by holding

*Black's Incandescent Vapor Lamp.*

a match over the glass chimney, the same as would be done with ordinary illuminating gas. Welsbach mantels are used, giving a steady, beautiful incandescent light of about 100-candle power. The manufacturers refer to it as a perfect gas machine and cheaper and safer than coal oil. Some of the other styles include student, wall, single and double hanging lamps, single and double brass and street lamps, &c., in oxidized copper finish and polished brass. In the East the trade is supplied by the Meriden Bronze Company, and by the Simmons Hardware Company and Black Mfg. Company (both of St. Louis, Mo.) in the West.

**The Gurney Nursery or Wine Refrigerator.**

The Gurney Refrigerator Company, Fond du Lac, Wis., have brought out for the approaching season the nursery or wine refrigerator which is herewith illustrated. This is a new departure in the refrigerator line. The construction adopted is such as to make the article an ornamental piece of furniture. It is intended to supply the demand for a refrigerator which can be placed in the nursery as a slightly receptacle for milk and other necessary supplies, and also for use in a sick room. It can further be used to advantage in bachelors' quarters or city offices. Great care has been taken in its construction. It is made with mahogany finish, having inlaid or-

nametations, and contains a large porcelain lined ice compartment containing a tank from which drinking water can be drawn. The full provision chamber is lined with tile. The ice compartment and metallic shelves can all be removed, so that every part of the refrigerator is accessible for cleaning. The style and construction of

*The Gurney Nursery or Wine Refrigerator.*

the refrigerator are such that it is free from the usual objections to a refrigerator, as it can be placed in apartments of the most fastidious without its real use and purposes being suspected, as it has the appearance more of a music cabinet than a refrigerator.

**Crown and Anchor Shaving Set.**

Smith & Hemenway Company, 296 Broadway, New York, have put on the market the Crown and Anchor shaving set for travelers' or home use, as here illustrated. Several styles can be furnished, varying in price from 90 cents a set and up, according to the character of the box and contents. Some of the containers are leatherette, silk satin and cotton satin lined. The frames of the higher priced boxes are made of wood and are of a substantial character. The No. 887 set shown is

*Crown and Anchor Shaving Set.*

priced moderately and contains one genuine John Engstrom's Swedish razor, a horsehide swing strop with hose back, decorated china mug, block of perfumed magnesia, cake of perfumed shaving soap, stick of French cosmetic and white full bristle brush.

Crandall & Nelson, Owatonna, Minn., have dissolved partnership, and have been succeeded by S. R. Nelson Hardware Company. The business is both wholesale and retail, and covers a varied line, including Hardware, Stoves, Agricultural Implements, Wagons and Buggies, Furnaces, Corn Shellers, Grinding Mills, &c.

### The Perfection Spring Door Latch.

Clark Mfg. Company, Moline, Ill., are offering a latch, as here shown, for use on barn and outbuilding doors or gates. In Fig. 1 the latch is shown in position on the inside of the door, the door appearing transparent to show the latch. It is easily locked, if desirable, with the button at the back. In Fig. 2 the door is represented hooked open, using the loop which goes with the latch.

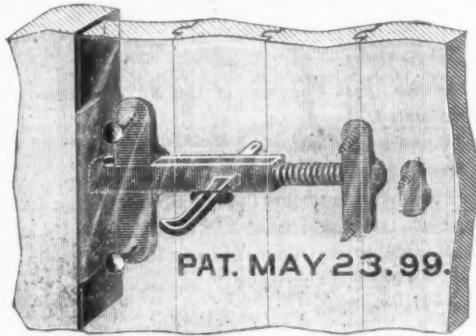


Fig. 1.—The Perfection Spring Door Latch.

This feature is referred to as an improvement, there being no possibility of the door or gate closing while driving stock through. All castings are referred to as of the best malleable iron, and especially durable. Among the points of excellence claimed for the latch are the following: That the latch, being on the inside of the door, is protected from the weather and cannot be affected by snow or ice; that it is easy to unfasten; that it is self

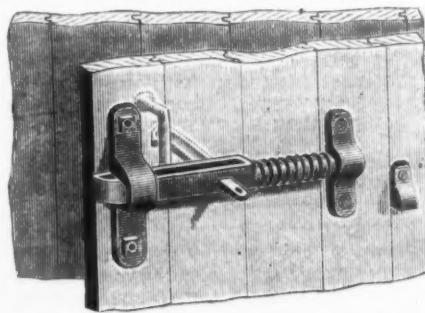


Fig. 2.—Perfection Latch with Door Open.

fastening, catching either open or shut the first time the door is pushed or swung by the wind; that the latch is so constructed that the door may be opened from either side, and that it holds a door close enough to keep out cold in winter.

### Triumph Wrench.

American Saw Company, Trenton, N. J., for whom Alder & Boyd, 37 Warren street, New York, are representatives, are manufacturing the Triumph wrench, here illustrated, with a wood handle, in addition to the all iron handle previously put on the market, buyers now having the option of either style. The main body of the



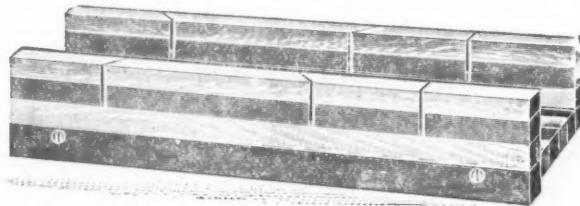
Triumph Wrench with Wood Handle for Pipe or Other Work.

wrench is hollow its entire length, into which is inserted the threaded shank of the movable jaw. The back and forward walls are far enough apart to allow the rear end of the threaded shank a limited rocking movement, so that when power is applied to the handle it causes the jaws to move toward each other, thereby gripping the pipe firmly, while a backward movement of the handle releases the grip. The jaws are of cast steel, polished and tempered. The thread upon the shank of the movable jaw is smooth and of such shape that stripping is said to be impossible. The nuts are soft steel neatly knurled and case hardened. The wrenches are made with or without inserted jaw. All the parts

are neatly finished and polished. The company in enumerating some of the advantages of the wrench say it never loses its grip, will not crush the pipe and never locks upon the pipe. It is made in 6, 8, 10, 14, 18, 24, 36 and 48 inch sizes, and can be used either as a monkey wrench or pipe wrench.

### Hard Wood Miter Boxes.

C. E. Jennings & Co., 101 Reade street, New York, are marketing the hard wood miter box here shown. It is made of alternate strips of black walnut and beech or cherry glued together. While making an attractive and salable miter box the chief object of this con-



Hard Wood Miter Box of Glued Alternate Strips.

struction is to counteract any tendency to warp, thus keeping the angles true for accurate work. There are three sizes—viz.: 12, 18 and 24 inches in length, the widths being  $2\frac{1}{4}$ ,  $3\frac{1}{2}$  and  $4\frac{1}{4}$  inches respectively. The two smaller sizes are packed in dozens, and the largest size six in a box. They also have a line of plain hard wood miter boxes.

### Chime Motor Gong.

The Gong Bell Mfg. Company, East Hampton, Conn., are making the chime signal bell for motor and other vehicles, as here illustrated. Two  $6\frac{1}{2}$ -inch gongs, pol-



Chime Motor Gong.

ished and nickelized, are mounted on a frame with a clapper so arranged as to strike both gongs simultaneously. The gongs being of different tones, tuned to accord, give a pleasing musical sound, which is also loud and clear. The mechanism is simple, and there are no gears or springs to get out of order. The engraving shows a portion of the vehicle bottom cut away to indicate the

method of attaching the gong. A slight movement of the foot will give a single stroke, or as many rapid strokes can be given as desired. These gongs can be made as small as 4 inches in diameter if necessary.

The Hunting-Weekes Company, Watertown, N. Y., have been incorporated with a capital stock of \$50,000. The interested parties are S. E. Hunting, J. Weekes and G. L. Hardy. They will wholesale Shelf and Heavy Hardware, Stoves, Agricultural Implements, Sporting Goods and Plumbers', Steam Fitters' and Tinnings' Supplies.

**The Claus Double Clinch Adjustable Handle Bar.**

Illustrations are given herewith of the Claus adjustable handle bar and of its several parts, manufactured by the Claus Adjustable Handle Bar Mfg. Company, Milwaukee, Wis. Fig. 1 shows the handle bar in one of its positions, it being capable of 20 or more variations. Fig. 2 shows the adjustment, Fig. 3 the expansion stem,



Fig. 1.—The Claus Double Clinch Adjustable Handle Bar.

and Fig. 4 the plain stem. The adjustment is very simple, as a thumb and finger are all the tools needed to change the bar into any position. The tapered wedge-like corrugations hold the adjustment with the grip of a brazing, permitting nothing to work loose. All the parts interlock. The bar can be adjusted while the wheel is in motion. The expansion stem is made on the company's special principle. In expanding devices the

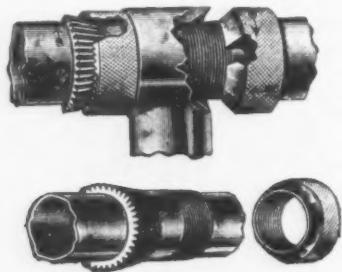


Fig. 2.—The Adjustment.

point of contact of the expander with the interior of the crown stem is usually so small as to be inefficient, frequently bulging the stem at the point of contact, causing the handle bar to work loose and compelling it to be shifted up or down to a new position to get another hold, and thereby changing the position of the bar to one other than that desired, besides often causing the breakage of the crown stem at the point of contact. These objec-



Fig. 3.—The Expansion Stem.

Fig. 4.—The Plain Stem.

tions are overcome by constructing the Claus stem so that it has a positive contact with the crown stem extending over the entire length of the post. The handle bar is heavily nickelated on copper by the company's special process. They guarantee it forever, which is an unusual exhibition of perfect confidence.

Helena Hardware Company, Helena, Mont., have incorporated with a capital stock of \$20,000. Albert Kleinschmidt is president of the company and J. L. Wag-

genor manager of the business, which is both wholesale and retail, covering Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Miners' Supplies, &c.

C. A. Nancolas, Estherville, Iowa, has lately moved into new quarters, which are referred to as especially attractive and convenient. Mr. Nicholas has also built a new store at Huntington, and will open a branch business there.

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<b>Cimlets—</b>	
Nail, Metal, Assorted, gro. \$1.40@1.75	
Spike, Metal, Assorted, gro. \$3.00@3.50	
Nail, Wood Handled, Assorted, gro. \$4.00@4.50	
Spike, Wood Handled, Assorted, gro. \$5.00@5.50	
<b>Class, American Window</b>	
List Nov. 18, 1898.	
Small lots from store:	
Eastern. .... 80¢@10@80¢@20%	
Western. .... 80¢@10@80¢@20%	
From Factory, with Frt. Allowance:	
Carloads. .... 80¢@15%	
1000 boxes or more Gulf Ports. .... 85¢	
3000 boxes or more. .... 80¢@2%@80¢@20%	
5000 boxes or more. .... 85¢	
<b>Clue—Liquid, Fish—</b>	
List A, Bottles or Cans, with Brush. .... 37¢@50%	
List B, Cans (1/2 pts., pts., qts.). .... 35¢@48%	
List C, Cans (1/2 gal., gal.). .... 25¢@45%	
<b>Clue Pots</b> —See Pots, Clue.	
<b>Grease, Axle—</b>	
Common Grade. .... gro. \$5.00@6.00	
Allerton's Axle:	
1 lb. Tins, 1/2 gr. .... 89.00	
3 lb. Tin Pails, 1/2 doz. .... \$2.00; 5 lb. .... \$3.00;	
10 lb. .... \$6.00.	
25 lb. wood pails. .... 1/2 doz. \$12.00	
Dixon's Everlasting. .... 10 lb. pails, ea. 85¢	
Dixon's Everlasting, in bxs. .... 1 lb. .... \$1.20;	
2 lb. .... \$2.00	
<b>Grindstone Fixtures—</b>	
See Fixtures, Grindstone.	
<b>Gun Powder</b> —See Powder.	
<b>Hack Saws</b> —See Saws.	
<b>Hafts, Awl—</b>	
gro.	
Peg Patent, Leather Top. .... 34.90@5.25	
Peg Patent, Plain Top. .... 33.90@5.75	
Sewing, Brass Ferrule. .... 31.50@6.10	
Saddlers', Brass Ferrule. .... \$1.35@1.45	
Peg, Common. .... \$1.20@1.35	
Brad, Common. .... \$1.50@1.75	
<b>Halters and Ties—</b>	
Covert Mfg. Co., Web. .... 45¢@5%	
Covert Mfg. Co., Jute Rope. .... 45¢@5%	
Covert Mfg. Co., Sisal Rope. .... 30¢@5%	
Covert's Saddlery Works, 90 list, W-b. .... 60¢@5%	
Covert's Saddlery Works, Leather. .... 60¢@10%	
Covert's Saddlery Works, Jute. .... 60¢@5%	
Covert's Saddlery Works, Wo. .... 60¢@5%	
Covert's Saddlery Works, Manila. .... 60¢@5%	
Covert's Saddlery Works, Cotton. .... 70¢	
<b>Hammers—</b>	
Handled Hammers—	
Heller's Machinists'. .... 40¢@40¢@5%	
Magnetic Tack, Nos. 1, 2, 3, \$1.35, \$1.50, \$1.75. .... 40¢@10¢	
Pec, Stow & Wilcox. .... 40¢@40¢@5%	
Fayette R. Plumb:	
Artisan's Choice, A. E. Nail. .... 33¢@5% Engineers' and B. S. Hand. .... 50¢@10%	
Machinists' Hammers. .... 50¢@10%	
A. E. & A. E. Bell Face Nail. .... 33¢@5% Riveting and Timers'. .... 33¢@5%	
Gargent's C. S. New List. .... 45¢@45¢@10%	
<b>Heavy Hammers and Sledges—</b>	
3 lb. and under. .... lb. 45¢	
3 to 5 lb. .... lb. 36¢; 70¢@10@75	
Over 5 lb. .... lb. 30¢ & 10% Note—Lower prices sometimes made by jobbers.	
Wilkinson's Smits'. .... 34¢@10¢ lb.	
<b>Handcuffs and Leg Irons</b>	
See Police Goods.	
<b>Handles—</b>	
<b>Agricultural Tool Handles—</b>	
Hoe, Rake, Fork, &c. .... 50¢@10@60%	
Shovel, &c., Wood D Handle. .... 50¢@50¢@5%	
<b>Cross-Cut Saw Handles—</b>	
Atkins'. .... 40¢@45¢@5%	
Champion. .... 45¢@45¢@5%	
Diston's. .... 50¢	
<b>Mechanics' Tool Handles—</b>	
Auger, assorted. .... gro. \$2.40@2.60	
Auger, large. .... gro. \$2.85@3.00	
Bread Awl. .... gro. \$1.50@1.75	
Chisel Handles:	
Apple Tanged Firmer, gro. ass'd. .... \$2.25@\$2.50; large, \$2.75@\$3.00	
Hickory Tanged Firmer, gro. ass'd. .... \$1.75@\$2.50; large, \$2.50@\$2.50	
Apple Socket Firmer, gro. ass'd. .... \$1.75@\$2.50; large, \$2.25@\$2.50	
Hickory Socket Firmer, gro. ass'd. .... \$1.60@\$1.75; large, \$1.75@\$2.00	
Hickory Socket Framing, gro. ass'd. .... \$2.50@\$2.75; large, \$2.65@\$2.85	
File, assorted. .... gro. \$1.00@1.15	
Hammer, Hatchet, Axe, &c. .... 50¢@10%	
Hand Saw, Varnished, doz. 75¢@80¢ Not Varnished. .... 65¢@80¢	
Plane Handles:	
Jack, doz. 35¢@25¢; Jack Bolted. .... 55¢@60¢	
Fore, doz. 35¢@38¢; Fore, Bolted. .... 70¢@75¢	
<b>Hangers—</b>	
Barn Door, New Pattern, Round Groove, Regular:	
Inch. .... 3 4 5 6 8 8	
Doz. .... \$1.10 1.15 1.20 1.20 1.75	
Barn Door, New England Pattern, Check Back, Round Groove, Regular:	
Inch. .... 3 4 5 6	
Doz. .... \$1.60 2.00 2.60 3.25	
<b>Chicago Spring Butt Co.</b>	
Friction. .... 25¢	
Oscillating. .... 25¢	
Big Twin. .... 25¢	
Chisholm & Moore Mfg. Co.:	
Advance. .... 55¢	
Cleveland. .... 60¢	
Baggage Car Door. .... 50¢	
Elevator. .... 40¢	
Railroad. .... 55¢	
Czar Ball Bearing 1/2 doz. pair. .... 55¢	
No. 10 Roller Bearing, doz. pr. .... 5.50	
No. 20 Roller Bearing, doz. pr. .... 4.50	
Nickel. .... 50¢	
J. G. C. .... 50¢@2.10	
Lane Bros.:	
Parlor, Standard. .... 40¢@5¢@2.10	
Parlor, New Model. .... 40¢@2.10	
Barn Door, Standard. .... 60¢@2.10	
Covered. .... 50¢@10%@10%	
Special. .... 60¢@2.10	
Lawrence Bros.:	
Crown. .... 80¢	
New York. .... 80¢	
Sterling. .... 80¢	
McKinney Mfg. Co.:	
No. 2, Standard. .... 60¢@10¢	
No. 1, Special. .... 60¢@10¢	
Stowell Mfg. and Foundry Co.:	
Badger. .... 60¢	
Baggage Car Door. .... 33¢@5%	
Climax Anti-Friction. .... 55¢	
Elevator. .... 40¢	
Interstate. .... 50¢@10¢	
Mag. .... 50¢	
Matchless. .... 50¢@10¢	
Nansen. .... 50¢@10¢	
Parlor Door. .... 50¢	
Railroad. .... 50¢@10¢	
Street Car Door. .... 50¢@10¢	
Steel, Nos. 300, 400, 500. .... 40¢@15%	
Wild West. .... 50¢@5%	
Zenith for Wood Track. .... 50¢@10¢	
Taylor & Boggie Foundry Co.:	
Kidder's. .... 50¢@2.10	
Van Wagoner & Williams Hdw Co.:	
American Trackless. .... 33¢@2.10	
Wilcox Mfg. Co.:	
Bike Roller Bearing. .... 60¢@10¢	
C. J. Roller Bearing. .... 60¢@10¢	
Cycle Ball Bearing. .... 50¢	
L. T. Roller Bearing. .... 60¢@10¢	
New Era. .... 50¢@10¢	
New Richards. .... 60¢	
O. K. Roller Bearing. .... 60¢@10¢	
Prindle Improved. .... 60¢@10¢	
Richards' Improved. .... 60¢@10¢	
Richards' Single Track. .... 50¢@10¢	
Wilcox Dwarf Roller Bearing. .... 40¢@10¢	
Wilcox-Ives. .... 60¢@10¢	
Wilcox Tandem Roller Bearing. .... 60¢@10¢	
Wilcox Trolley Ball Bearing. .... 40¢	
Wilcox Trolley Roller Bearing. .... 50¢@10¢	
Wilcox Trolley Roller Bearing. .... 40¢@10¢	
<b>Hatches—</b>	
McKinney's Perfect Hasp, 1/2 doz. .... \$1.10	
Wrought Hasp, Staples, &c. .... 40¢@10%	
<b>Harness Menders</b> —See Menders.	
<b>Harness Snaps</b> —See Snaps.	
<b>Hasps—</b>	
McKinney's Perfect Hasp, 1/2 doz. .... \$1.10	
Wrought Hasp, Staples, &c. .... 40¢@10%	
<b>Hatches—</b>	
Best Brands. .... 40¢@10@50%	
Cheaper Brands. .... 50¢@10@50¢@10@50%	
Note—Net prices often made.	
<b>Hay and Straw Knives—</b>	
See Knives.	
<b>Hinges—</b>	
Blind Hinges—	
Lull & Porter Old Style Shutter:	
No. .... 1 1 1/2 2 2 1/2	
Doz. pair. .... \$0.70 .50 .60 .55	
1888 Old Pattern Blind Hinge:	
No. .... 1 3 5	
Doz. pair. .... \$0.50 1.15 2.85	
Parker. .... 70¢@75¢	
North's Automatic Blind Fixtures, No. 2, for Wood. .... \$0.90; No. 3, for Brick. .... \$1.50. .... 10¢	
Reading's Gravity. .... 75¢@10¢	
Sargent's, Nos. 1, 3, 5. .... 60¢@10%@10%	
Sargent's, Nos. 11, 13. .... 7 @10@70@10@10¢	
Wrightsville R'dware Co.:	
Acme, Lull & Porter. .... 65¢@10¢	
Buffalo Gravity Locking, Nos. 1, 3 and 5. .... 65¢@10%@10%	
Champion Gravity Locking, No. 75. .... 75¢@10%	
1888 Old Pat'n, Nos. 1, 3 & 5. .... 75¢@10%	
Tip Pattern, Nos. 1, 3 and 5. .... 75¢@10%	
Double Locking, Nos. 20 and 25. .... 70¢@10%	
Empire, Nos. 101 and 103. .... 65¢@10%	
Niagara Gravity Locking, Nos. 1, 3 and 5. .... 65¢@10%@10%	
Noiseless, Nos. 56, 60, 65 and 55. .... 65¢@10%@10%	
O. S. Lull & Porter. .... 65¢@10%@10%	
Pioneer, Nos. 060, 45 and 5%. .... 65¢@10%@10%	
Cotton. .... 65¢@10%@10%	
Steel. .... 65¢@10%@10%	
Steamboat Gravity Locking, No. 10. .... 75¢@10%	
Stanley's Steel Gravity Blind Hinges, \$1.20. .... 20¢@10%	
<b>Gate Hinges—</b>	
Clark's or Shepard's—Doz. sets:	
No. .... 1 2 3	
Hinges with Latches. .... \$1.90 2.50 4.25	
Hinges only. .... 1.30 1.55 3.20	
Latches only. .... 0.70 0.70 1.20	
New England:	
With Latch. .... doz. \$1.75@1.80	
Without Latch. .... doz. \$1.50@1.45	
Reversible Self-Closing:	
With Latch. .... doz. \$1.65@1.75	
Without Latch. .... doz. \$1.30@1.35	
Western:	
With Latch. .... doz. \$1.80@1.85	
Without Latch. .... doz. \$1.00@1.05	
<b>Spring Hinges—</b>	
Holdback, Cast Iron. .... gro. \$7.00@7.50	
Non-Holdback, Cast Iron. .... gro. \$6.00@6.50	
<b>Covert Saddler, Works' Self Locking Gate and Door Hook</b> .... 60¢@10%	
<b>Crown Picture</b> .... 50¢@10%	
<b>Bench Hooks</b> —See Bench Stoops.	
<b>Corn Hooks</b> —See Knives, Corn.	
<b>Horse Nails</b> —See Nails, Horse.	
<b>Horseshoes—</b>	
See Shoes, Horse.	
<b>Hose, Rubber—</b>	
Garden Hose, 3/4-inch:	
Competition. .... ft. 14¢@5¢@10¢	
5-ply Standard. .... ft. 5¢@6¢	
4-ply Standard. .... ft. 6¢@6¢@8¢	
3-ply extra. .... ft. 6¢@7¢@12¢	
2-ply extra. .... ft. 7¢@8¢@12¢	
High Grade. .... ft. 9¢@11¢@12¢	
Cotton Garden, 3/4-in. coupled:	
Low Grade. .... ft. 5¢@6¢@8¢	
Fair quality. .... ft. 7¢@8¢@10¢	
Good quality. .... ft. 8¢@8¢@10¢	
<b>Iron—Sad—</b>	
From 4 to 10. .... 15 34¢@3¢@4¢	
B. B. Sad Irons. .... lb. 3¢@4¢@5¢	
Chinese Laundry. .... lb. 5¢@5¢@6¢	
Chinese Sad. .... lb. 5¢@4¢@4¢	
Mrs. Potts', per set:	
Nos. 50 55 60 65	
85¢@1.00 78¢@93¢ 95¢@1.10 89¢@1.03	
New England Pressing. .... lb. 3¢@3¢@3¢	
<b>Soldering—</b>	
Soldering Coppers. .... lb. 28¢@30¢	
Covert Mfg. Co. .... 20¢@24¢	
<b>Pinking—</b>	
Pinking Irons. .... doz. 50¢@60¢	
<b>Jack Screws—See Screws.</b>	
<b>Jacks, Wagon—</b>	
Covett Mfg. Co., Steel. .... 45¢@6¢	
Daisy. .... 70¢	
Ill. I. & B. Co. Common. .... 40¢@46¢@50¢	
Lockport. .... 40¢@46¢@50¢	
Victor. .... 60¢	
Lane's Steel. .... 33¢@33¢	
<b>Kettles—</b>	
Brass, Spun, Plain, list Jan. 10, '99.	
15¢@20%	
Enamelled and Tea—See Ware, Hollow.	
<b>Knife Sharpeners—</b>	
See Sharpeners, Knife.	
<b>Knives—</b>	
Butcher, Shoe, &c.—	
Dick's Butcher Knives. .... 40¢@5¢	
Foster Bros.' Butcher, &c. .... 30¢@5¢	
Nichols' Butcher Knives. .... 50¢@5¢	
Hay and Straw—See Hay Knives.	
<b>Corn—</b>	
Ft. Madison Cut-Easy. .... 5¢@5¢	
<b>Drawing—</b>	
Standard List. .... 75¢@75¢@10¢@10%	
Adjustable Handle. .... 25¢@33¢@45¢	
Bradley's. .... 35¢	
Swan's. .... 70¢@75¢@80¢	
Watrous. .... 30¢@30¢@40¢	
L. & J. White. .... 20¢@25¢@25¢	
Cautelio's Folding. .... 50¢@50¢@5¢	
<b>Hay and Straw—</b>	
Blizzard. .... 85¢@75¢@80¢	
Iwan's Sickle Edge. .... 5¢@5¢@5¢	
Lightning. .... 87.50	
<b>Mincing—</b>	
Buffalo. .... 5¢@5¢@5¢	
Smith's. .... 5¢@5¢@5¢	
Single, \$3; Double, \$3	
45¢@50¢@50¢	
<b>Miscellaneous—</b>	
Farriers'. .... doz. \$2.00@3.00	
Wostenhime's. .... 5¢@5¢@3.25	
<b>Knobs—</b>	
Base, 2 1/2-inch, Birch, Rubber tip. .... \$1.50@1.55	
Carriage, Jap, all sizes. .... gro. 30¢@33¢	
Door, Mineral. .... 35¢@35¢@35¢	
Door, Por. Jap d. .... doz. 85¢@88¢	
Door, Por. Nickel. .... doz. \$2.10@2.20	
Bardisley's Wood Door, Shutter, &c. .... 10¢	
Tree and Hat, Sargent's. .... 35¢@35¢	
Coat and Hat, Wrightsville. .... 65¢@10%	
Harness, Reading List. .... 70¢@10¢@10¢@10%	
<b>Wire—</b>	
Belt. .... 80¢@80¢@10%	
Atlas Coat and Hat. .... 50¢@50¢@10%	
Czar Harness. .... 50¢@10%	
Wire Coat and Hat:	
Acme. .... 60¢@60¢@5%	
B. B. .... 70¢@70¢@75¢	
V. Brace, Chief and Czar. .... 50¢@10%	
Gem. .... 60¢@60¢@5%	
Bright Wire Goods—See Wire.	
<b>Wrought Iron—</b>	
Box, or Case, Octagon Steel. .... doz. \$2.10@2.20	
Cotton. .... doz. \$1.05@1.15	
Picture, T. & S. Mfg. Co. .... 1.50@1.55	
Tassel, T. & S. Mfg. Co. .... 50¢@10%	
Wrought Staples, Hooks, &c. .... See Wrought Goods.	
<b>Miscellaneous—</b>	
Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50	
Grass. .... Nos. 1 2 3 4	
Best. .... \$1.50 1.75 2.00	
Common. .... \$1.40 1.40 1.75	
Potato and Manure. .... 75¢@15¢	
Whimfretes. .... 1.4¢@4¢	
Hooks and Eyes:	
Brass. .... 60¢@10¢@10¢@70¢@70¢@10¢	
Best. .... \$1.50 1.75 2.00	
Common. .... \$1.40 1.40 1.75	
Potato and Manure. .... 75¢@15¢	
Whimfretes. .... 1.4¢@4¢	
Brass. .... 60¢@10¢@10¢@70¢@70¢@10¢	
Malleable Iron. .... 70¢@5@70¢@10¢	
<b>Latches, Thumb—</b>	
Roggins' Latches. .... doz. 35¢@45¢	
<b>Lawn Mowers—</b>	
See Mowers, Lawn.	
<b>Leaders, Cattle—</b>	
Small. .... doz. 45¢; large, 55¢	
Cover Mfg. Co. .... 45¢@45¢	

**Lemon Squeezers—**  
See *Squeezers, Lemon.*

**Lifters, Transom—**

Dickson:	
3 x 4 ft. x 1/4	100 \$11.00
Other sizes Iron	70 & 10%
Other size, Brass and Bronze	70%
Excelsior	60 & 60 & 10%

Payson's:

Sold Grip Nos. 643 and 644, 100,

81.00

Bronzed Iron

70%

**Lines—**

Wire Clothes, Nos. 18 19 20

100 feet \$3.50 2.75 2.25

25 feet \$1.75

Ossawan Mills:

Crown Solid Braided Chalk

Mason's, No. 0 to No. 5

Silver Lake Braided Chalk, No. 0, \$6.00;

No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50

2 gr.

30%

**Locks, &c.— Cabinet—**

Cabinet Locks

\$3.50 \$3.50 \$7.50

**Door Locks, Latches, &c.—**

[Net prices are very often made on these goods.]

Reading Hardware Co.

40%

H. & E. Mfg. Co.

45 & 95

Sargent & Co.

40 & 10 & 10%

Maymester-Barry Co.

30 & 35%

Knows' Victor

50 & 10%

**Elevator—**

Stowell's

33.50

**Padlocks—**

Wrought Iron, list Dec. 3, '99

70 & 70 & 10%

Dog Collar, S. B. Co.

40%

R. & F. Mfg. Co. Wrt Steel & Brass

50%

S. B. & Co.

40%

**Sash, &c.—**

Fitch's Bronze and Brass

68.50

Fitch's Iron

70%

Ives' Patent

62.50 & 10 & 66.50 & 102

Payson's Perfect

70%

Payson's Signal new list

75%

Reading

60 & 10 & 10 & 70%

**Machines—**

Boring—

Without Augers.

Upright. Angular.

Improved No. 8. \$4.25 No. 1 \$5.00

Improved No. 4. 3.75 No. 2 3.35

Improved No. 5. 2.75

Jennings' 2.50

3.00

Millers' Falls 4.75

Snell's, Rice's Pat. 2.50

2.75

Swan's, No. 500. 5.10 No. 200 6.45

**Hoisting—**

Moore's Anti-Friction Differential Pul-

ley Block

30%

Moore's Hand Hoist, with Lock Brake

20%

**Washing—**

Wayne American, 10 doz. \$27.00

Western Star, No. 2, 10 doz.

28.00

Western Star, No. 3, 10 doz.

30.00

St. Louis, No. 41, 10 doz.

60.00

**Mallets—**

Hickory

45.50 & 50 & 55

Lignumvita

45.50 & 50 & 55

Tanners', Hickory and Applewood,

doz. 50 & 55

Fiber Head Stearns'

33.50 & 10

**Mats—**

Door—

Elastic Steel (W. G. Co.)

10%

**Mattocks—**

List Feb. 23, 1899

65 & 65 & 10%

**Meat Cutters—**

See Cutters, Meat.

**Milk Cans—** See Cans, Milk.

**Mills— Coffee—**

Buc and Side, list Jan. 1, '98

60 & 50 & 60 & 10 & 55

Net prices are often made on some goods which are lower than above discounts.

Enterprise Mfg. Co., list Jan. 17, '98 30%

National, list Jan. 1, '94 30%

Parker's Columbia and Victor 30 & 10%

Parker's Upright 30 & 10 & 40%

Swift, Lane Bros. 30%

**Mincing Knives—**

see Knives, Mincing.

**Molasses Gates—**

see Gates, Molasses.

**Money Drawers—**

see Drawers, Money.

**Mowers, Lawn—**

Net prices are generally quoted.

10 12 14 16-inch

cheap \$1.75 & \$2.00

Good 3.00 3.25 3.50 3.75

High Grade 4.00 4.25 4.50 4.75

Pennsylvania and Continental 6.00 & 10 & 15

Lake City 20 & 25

Great American 30 & 35

Philadelphia:

Styles M., S. C., K., T.	70 & 10%
Style A, all Steel	60 & 10%
Style E, Low Wheel	60 & 10%
Style E, High Wheel	70 & 10%
Drexel and Gold Coin, low list	60%

**Nails—**

Cut and Wire. See *Trade Report*.  
Wire Nails and Brads, Papered.  
List July 20, 1899. 80 & 80 & 10%

Hungarian, Finishing, Upholster-

ers, &c. See *Trade Report*.

**Horse—**

Nos. 6 7 8 9 10
25¢ 23¢ 22¢ 21¢ 21¢

40 & 5%
Capewell 10¢ 18¢ 17¢ 16¢ 16¢ 10¢ 8¢ 5%

40 & 5%
B. K. 25¢ 23¢ 22¢ 21¢ 21¢ 21¢ 20¢ 19¢

40 & 5%
Champlain 28¢ 26¢ 25¢ 24¢ 23¢

40 & 5%
Maud S. 25¢ 23¢ 22¢ 21¢ 21¢ 20¢ 19¢

40 & 5%
Neponset 23¢ 21¢ 20¢ 19¢ 18¢

40 & 5%
Putnam 23¢ 21¢ 20¢ 19¢ 18¢

40 & 5%
Standard 23¢ 21¢ 20¢ 19¢ 18¢

40 & 5%
Star 23¢ 21¢ 20¢ 19¢ 18¢

40 & 5%
Vulcan 23¢ 21¢ 20¢ 19¢ 18¢

25 & 10%
Vulcan 23¢ 21¢ 20¢ 19¢ 18¢

25 & 10%
Vulcan 23¢ 21¢ 20¢ 19¢ 18¢

25 & 10%
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25 & 10%
Vulcan 23¢ 21¢ 20¢ 19¢ 18¢

25 & 10%</
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**Shovels and Tongs—**

Brass Head ..... 60¢  
Iron Head ..... 60¢@60¢@10%

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00@12.00  
Buffalo Metallic Blued, S. S. & Co., 1/2 gr.:  
14¢@16¢ 18¢@18¢ 18¢@20¢  
812.90 \$13.80 \$15.00  
Eclipse ..... 10¢@10.00  
Electric Light ..... 12¢@12.00  
Hunter's Genuine ..... 12¢@12.50  
Shaker (Barler's Pat.) Flour Sifters .....  
1/2 doz. \$2.00 ..... 35¢

**Sieves, Wooden Rim—**

Mesh 18, Nested, doz. 30¢@30¢@80¢@80¢  
Mesh 20, Nested, doz. 35¢@35¢@90¢@90¢  
Mesh 24, Nested, doz. 1.00@1.05

**Sinks—****Cast Iron—**

Low list ..... 60¢@65¢  
Note.—The low list is now generally  
used, but some jobbers use high list.

**Wrought Steel—**

Columbus Galv'd and Enamelled ..... 60¢@5¢  
Columbus, Painted ..... 45¢  
L. & G. ..... 50¢

**Skeins, Wagon—**

Cast Iron ..... 70¢@70¢@10¢  
Malleable Iron ..... 40¢@40¢@10¢  
Steel ..... 35¢@35¢@5¢  
L. I. & B. Co. Steel ..... 35¢

**Slates—**

"D" Slates ..... 50¢@10¢@50¢@10¢  
Unexcelled Noiseless Slates ..... 60¢@60¢ tens@60¢ tens@5¢  
Wire Bound ..... 40¢@10¢@50¢  
Double Slates, add \$1 case, net.

**Slaw Cutters—See Cutters.****Snaps, Harness—**

German ..... 40¢@40¢@10¢  
Covert Mfg. Co.:  
Derry ..... 35¢@35¢  
High Grade ..... 45¢@45¢  
Jockey ..... 40¢@40¢  
Trojan ..... 45¢@45¢

Covert's Saddlery Works:  
Banner ..... 60¢@10¢  
Crown ..... 60¢@10¢  
Triumph ..... 60¢@10¢  
W. E. T. Fitch Co.:  
Bristol ..... 40¢@10¢  
Empire ..... 50¢@5¢  
German ..... 40¢  
National ..... 30¢@5¢  
Perfect ..... 45¢  
Clipper ..... 50¢@5¢  
Champion ..... 40¢  
Security ..... 40¢  
Victor ..... 40¢@40¢  
Onel-a-omnium ty: ..... 65¢@65¢@10¢  
Sod'd Steel ..... 5¢@5¢@10¢  
Sod'd Swivel ..... 5¢@5¢@10¢@10¢  
Sargent's Patent Guard L. ..... 60¢@60¢@10¢

**Snaths—**

Scythe ..... 45¢@5¢

**Snips, Tiners'—See Shears.****Soldering Irons—**

See Irons, Soldering.

**Spoke Trimmers—**

See Trimmers, Spoke.

**Spoons and Forks—****Silver Plated—**

Flat Ware ..... 50¢@10¢@60¢@10¢  
Wm. Rogers M'g. Co. ..... 50¢@10¢

**Miscellaneous—**

German Silver ..... 60¢@10¢  
Wm. Rogers Mfg. Co.:  
18¢ German Silver ..... 60¢  
Rogers' Silver Metal ..... 50¢@10¢

**Springs—****Door—**

Gem (Coll) ..... 20¢  
Star (Coll) ..... 30¢  
Torrey's Rod, 39 in. ..... 30¢@10¢@1.25  
Warner's No. 1, 1/2 doz. \$1.50; No. 2, \$3.40  
Victor (Coll) ..... 60¢@10¢@60¢@10¢@5¢

**Carriage, Wagon, &c.**

1/4 in. and wider, Blk. Hf. Bt. Bt.  
Tested and Temp 5% 5/4 lb  
Oil Tested and  
Tempered ..... 6¢ 6/4 7¢ lb  
Cliff's Bolster Springs ..... 35¢  
Cliff's Seat Springs ..... 1/2 pair 5¢

**Sprinklers, Lawn—**

Enterprise ..... 25¢@30¢  
Philadelphia No. 1, 1/2 doz. \$12; No. 2, \$15; No. 3, \$22 ..... 30¢

**Squares—**

Nickel plated ..... 1 List May 1, '95.  
Steel and Iron ..... 70¢@70¢@10¢@10¢  
Rosewood Hdl. Try Square and T-Bevels ..... 60¢@10¢@10¢@70¢  
Iron Hdl. Try Squares and T-Bevels ..... 60¢@10¢@40¢@10¢@10¢  
Denton's Try Sq. and T-Bevels ..... 60¢@10¢  
Winterbottom's Try and Mitre ..... 50¢@10¢

**Squeezers—****Lemon—**

Wood, Common, gro. No. 0. \$5.00;  
No. 1, \$5.75@6.00; No. 2, \$10.00.  
Wood, Porcelain Lined:  
Cheap ..... 1/2 doz. \$2.00@2.75  
Good Grade ..... 1/2 doz. \$3.00@3.50

**Tinned Iron—**

Iron, Porcelain Lined doz. \$2.90@3.25  
Jennings' Star ..... 1/2 doz. \$1.85@1.90  
King ..... 1/2 doz. \$2.00

**Staples—**

Barbed Blind ..... 1b. 9¢@10¢  
Electricians' Association list. 75¢@10¢  
Fence Staples, same price as Barbed  
Wire. See Trade Report.

**Poultry Netting—**

80¢@10¢  
Grand Crossing Tack Co.'s list. 75¢@10¢

**Steels, Butchers'—**

Dick's ..... 40¢  
Foster Bros. ..... 30¢  
C. & A. Hoffmann's ..... 40¢  
Nichols Bros. ..... 50¢

**Steelyards—**

25¢@25¢@10¢

**Stocks and Dies—**

Blacksmiths' ..... 10¢  
Gardner ..... 50¢  
G. een River ..... 25¢  
Lightning Screw Plate ..... 25¢  
Little Giant ..... 25¢  
Rocco's New Screw Plates ..... 20¢@30¢  
Curtis Reversible Ratchet Die Stock. 25¢

**Stone—**

Scythe Stones—

Pike Mfg. Co., list '95-'96 ..... 33¢@  
Cleveland Stone Co., list Nov. '92. 33¢@

**Oil Stones, &c.—**

Pike Mfg. Co.:  
Hindostan No. 1, 1/2 lb. 8¢  
Sand Stone ..... 5¢  
Turkey Oil Stone, Extra ..... 33¢@  
5 to 9 in. ..... 8¢ 33¢@10¢  
Turkey Slips ..... 1.50¢

**Stone Mills—**

Emery Oil, 1/2 doz. \$5.00 ..... 50¢@60¢

**Stoners—**

Enterprise ..... 25¢@30¢

**Stops, Bench—**

Millers Falls ..... 15¢@10¢  
Morrill's, 1/2 doz. No. 1, \$10.00; No. 2, \$11.00, 40¢@20¢

**Stops, Window—**

Ives' Patent ..... 25¢@5¢  
Taplin's ..... 45¢

**Stove Boards—**

See Boards, Stove.

**Stove Polish—See Polish, Stove.****Straps, Box—**

Cary's Universal, case lots ..... 30¢@10¢

**Stretchers, Carpet—**

Cast Iron, Steel Points ..... doz. 55¢@65¢

Cast Steel, Polished ..... doz. \$2.25

Socket ..... doz. \$1.75

**Stuffers, Sausage—**

Miles' Challenge, 1/2 doz. \$2.00@50¢@5¢

Enterprise Mfg. Co. ..... 25¢@25¢@7¢@5¢

National Specialty Mfg. Co., list Jan. 1, '97 ..... 30¢

**Tacks, Brads, &c.—**

List Jan. 15, '99.

**Carpet Tacks:**

American Blued ..... 30¢@90¢@10¢

American Tinned ..... 30¢@90¢@10¢

American Cut Tacks ..... 30¢@10¢@35¢@10¢@10¢

Swedes Iron Tacks ..... 30¢@90¢@10¢

Swedes Upholsterers' Tacks ..... 90¢@90¢@90¢@25¢

Gimp Tacks ..... 90¢@90¢@90¢@25¢

Lace Tacks ..... 90¢@90¢@90¢@25¢

Trimmers' Tacks ..... 80¢@90¢@10¢

Looking Glass Tacks ..... 70¢@70¢@10¢

Bill Posters' and Railroad Tack ..... 90¢@20¢@90¢@10¢@10¢

Hungarian Nails ..... 80¢@25¢@80¢@15¢

Common and Patent Brads ..... 70¢@5¢

Trunk and Clout Nails ..... 75¢@75¢@10¢@5¢

**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list ..... 40¢@

Daly Stove Trucks, Improved pattern ..... 40¢@

doz. \$18.00

**Tubs, Wash—**

No. 1 ..... 2 3

Galvanized, per doz. \$5.00 55¢ 6.00

Galvanized S. S. & Co., with Wringer Attachment ..... 7¢@25¢

No. 20, \$7.75; No. 30, \$8.25

**Twine—****Miscellaneous—**

Flax Twine—

BC B. No. 9, 1/4 and 1/2-lb. Balls. 2¢ 2¢

No. 12, 1/4 and 1/2-lb. Balls. 1¢ 2¢

No. 18, 1/4 and 1/2-lb. Balls. 1¢ 2¢

No. 24, 1/4 and 1/2-lb. Balls. 1¢ 2¢

Chalk Line, Cotton, 1/2-lb. Balls. 1¢ 2¢

18¢@20¢

Cotton Mops, 6, 9, 12 and 15 lb. to doz. 7¢@8¢

Cotton Wrapping, 5 Balls to lb. 9¢@16¢

American 2-Ply Hemp, 1/2-lb. Balls. 12¢@13¢

Quebec 2-Ply Hemp, 1/2-lb. Balls. 12¢@13

<b>Washers—</b>	
Leather, Axle—	
Solid.....	80¢ to 10¢ @ 85%
Patent.....	.35@85¢@5%
Coil: 7c 1 1/4 1/4 Inch, 12c 13c 14c 16c per 100	
Iron or Steel—	
Size bolt.... 5-16 3/4 1/2 5/8 3/4 Washers.... \$6.20 5.30 4.00 3.80 3.60	
In lots less than one keg add 3/4¢ per lb., 6-lb. boxes add 1/2¢ to list.	
NOTE.—There is a wide difference in prices East and West, and some Foun- dries are naming high prices than the above.	
<b>Well Buckets, Galvanized</b>	
See Pails, Galvanized.	
<b>Wheels Well—</b>	
8-in., \$1.75@2.00; 10-in., \$2.25@2.80; 12-in., \$2.75@3.25; 14-in., \$4.00@4.50	
<b>Wire and Wire Goods—</b>	
Market: Nos. 6 to 16:	
Br. & Ann..... 70¢@73¢ Cop'd..... 65¢@67¢ Galv..... 65¢@67¢ Tin'd, Tin'd list..... 72¢@75¢	
Stone, Br. and Ann'd:	
Nos. 19 to 26..... 77¢@77¢@2.25 Nos. 27 to 36..... 77¢@77¢@2.25@71¢	
Annealed Wire on Spools.....	
60¢@10@60¢@10¢@5¢	
Brass, list Feb. 26, '96..... 15%	
<b>Weights, Sash—</b>	
Carloads at factory..... \$19.00@... Less than carloads at factory..... 20.00@...	
NOTE.—There is a wide difference in prices East and West, and some Foun- dries are naming high prices than the above.	
<b>Bright Wire Goods—</b>	
Iron and Brass, list July 1, 1899....	
80¢@10@80¢@10¢@10%	
<b>Wire Cloth and Netting—</b>	
Galvanized Wire Netting.....	75¢@10¢@30%
Painted Screen Cloth per 100 ft.....	\$1.50@...
<b>Wire Barb—See Trade Report.</b>	
<b>Wire, Rope—See Rope, Wire.</b>	
<b>Wrenches—</b>	
Agricultural..... 75@...	
Baxter's S..... 60¢@10¢	
Cox's Genuine..... 33¢@10¢@5¢@3¢	
Cox's Mechanics' 33¢@10¢@5¢@3¢	
Acme..... 30¢@10¢	
Aiken's Pocket (Bright)..... 8¢@3.20	
Alligator..... 60¢@10¢@10¢	
<b>Bemis &amp; Call's:</b>	
Adjustable S Pipe..... 35¢@5¢	
Brigg's Pattern..... 40¢	
Combination Black..... 40¢@10¢	
Combination Bright..... 40¢@5¢	
Cylinder or Gas Pipe..... 55¢	
Extra Heavy..... 45¢	
Merrick's Pattern..... 50¢	
No. 3 Pipe, Bright..... 55¢	
Bindley Automatic..... 30¢	
Boardman's..... 33¢@5¢	
Bull Dog, W. & B. .... 40¢@10¢@10¢	
Douglas' Engineer..... 40¢@10¢	
English..... 50¢@10¢	
Hercules..... 70¢	
Solid Handies, P. S. & W. .... 50¢	
Stevenson..... 60¢@10¢@10¢	
Thompson's..... 55¢	
<b>Wrought Goods—</b>	
Staples, Hooks, &c., list March 17 '92..... 80¢@10@85¢	
<b>Yokes, Neck—</b>	
Covert Saddlery Works, Trimble 1.60@5¢ Covert Saddlery Works, Neck Yoke Centers..... 70¢	
<b>Yokes, Ox, and Ox Bows—</b>	
Fort Madison's Farmers & Freighters'.. List net	
<b>Zinc—</b>	
Sheet..... lb 73¢@3¢	

## PAINTS, OILS AND COLORS.—Wholesale Prices.

## White Lead, Zinc, &amp;c.

Lead, Foreign white, in Oil.....	73¢@9¢
Lead, American White, in Oil:	
Lots 500 lb or over..... @ 6¢	
Lots less than 500 lb..... @ 6¢	
Lead, White, in Oil, 25 lb tin pails, add to keg price..... @ 5¢	
Lead, White, in Oil, 12 1/2 lb tin pails, add to keg price..... @ 4¢	
Lead, White, in Oil, 1 to 5 lb as sorted tins, add to keg price..... @ 1¢	
Lead, White, Dry in bbls..... @ 5¢	
Lead, American, Terms: On lots of 500 lbs, and over, 80 days, or 2% for cash if paid in 15 days from date of invoice.	
Zinc, American, dry..... \$1.44@ 5¢	
Zinc, Paris, Red Seal..... @ 6¢	
Zinc, Paris, Green Seal..... @ 9¢	
Zinc, Antwerp, Red Seal..... @ 7¢	
Zinc, Antwerp, Green Seal..... @ 8¢	
Zinc, V. M. in Poppy Oil, G. Seal lots of 1 ton and over..... 11 1/4¢	
lots less than 1 ton..... 12 1/4¢	
DISCOUNTS.—V. M. French Zinc.—Dis- counts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls., 4%. No discount allowed on less than 10 bbl. lots.	

## Dry Colors.

Black, Carbon.....	\$1.6 @20
Black, Drop, Amer.....	24¢@ 4
Black, Drop, Eng.....	5 @10
Black, Ivory.....	9 @20
Blue, Celestial.....	24¢@ 8
Blue, Chinese.....	35 @40
Blue, Prussian.....	32 @38
Blue, Ultramarine.....	7 @35
Brown, Spanish.....	14¢@ 1
Brown, Vandyke, Amer.....	14¢@ 24
Brown, Vandyke, Foreign.....	24¢@ 54
Carmine, No. 40.....	\$1.00@15¢@2.75
Green, Chrome, ordinary.....	5 @ 6
Green, Chrome, pure.....	19 @25

## Colors in Oil.

Black' Lampblack.....	10 @14
Blue, Chinese.....	33 @40

## Lead, Red, bbls, 1/4 bbls, and kegs:

Lots 500 lb or over..... @ 6¢	
Lots less than 500 lb..... @ 6¢	
Litharge, bbls, 1/4 bbls, and kegs:	
Lots 500 lb or over..... @ 6¢	
Lots less than 500 lb..... @ 6¢	
Ocher, French Washed..... 14¢@ 24	
Ocher, German Washed..... 4¢@ 5	
Ocher, American..... \$1.00@10.00@15.00	
Orange Mineral, English..... 9¢@10¢	
Orange Mineral, French..... 11 @15¢	
Orange Mineral, German..... 9¢@12¢	
Red, Indian, English..... 4¢@ 8¢	
Red, Indian, American..... 8 @ 8¢	
Red, Turkey, Eng. h..... 7¢@ 10¢	
Red, Tuscan, English..... 7 @ 10¢	
Red, Venetian, Amer. .... 100 lb @ 1.10	
Red, Venetian, English, .... 100 lb @ 1.10	
Sienna, Italian, Burnt and Powdered..... 3¢@ 6¢	
Sienna, Ital., Raw, Powd..... 3¢@ 6¢	
Sienna, American, Raw..... 1¢@ 2¢	
Sienna, American, Burnt and Powdered..... 1¢@ 2	
Talc, French..... \$1.00 lb \$1.25@1.50	
Talc, American..... 90 @1.10	
Terra Alba, French, 100 lb @ 80 @1.00	
Terra Alba, English..... 85 @1.00	
Terra Alba, American No. 1..... 45 @70	
Terra Alba, American No. 2..... 45 @50	
Umbra, Turkey, Bnt. & Pow. .... 24¢@ 3¢	
Umbra, Turkey, Raw & Powd. .... 9¢@ 3¢	
Umbra, Bnt, Amer..... 1¢@ 2	
Umbra, Raw, Amer..... 1¢@ 2	
Yellow, Chrome..... 10¢@25	
Vermilion, American Lead..... 10 @20	
Vermilion, Quicksilver, bulk .. 6¢@ 8¢	
Vermilion, Quicksilver, bags..... 6¢@ 70	
Vermilion, English, Import..... 71 @72	
Vermilion, Chinese..... 80 @90	

## Miscellaneous.

Barytes, Foreign, \$1.00 ton.....	18.00@20.00
Barytes, Amer. Roasted.....	19.00@20.00
Barytes, Crude.....	9.00@10.00
Chalk, in bulk..... 100 lb 2.15¢@2.25	
Chalk, in bbls..... 100 lb 35¢	
China Clay, English, \$1.00 ton..... 11.00@17.00	
Cobalt, Oxide..... 100 lb 4.25¢@5.50	
RED Venetian, English, .... 100 lb 2.10	
Whiting, Common..... 100 lb 4.25¢@5.50	
Whiting, Gilders..... 4.75¢@5.50	
Whiting, extra Gilders..... 5.75¢@6.50	

## Putty.

In barrels and 1/4 bbls.....	1.70
In tin cans, 1 to 5 lb.....	2.25
In bladders.....	2.20

## Spirits Turpentine.

In Southern bbls.....	52¢
In machine bals.....	53¢@2

## Clue.

Low Grade.....	13 @15
Cabinet.....	13 @16
Medium White.....	14 @16
Extra White.....	16 @25
French.....	12 @23
.....	13 @15

## Animal, Fish and Vegetable Oils.

Linseed, City, raw.....	5 gal. 51
Linseed, City, boiled.....	52 @53
Linseed, State and West'n, raw 17	49

## Linseed, raw Calcutta seed.....

Linseed, Prime.....	15 @47
Linseed, Extra No. 1.....	38 @39
Linseed, No. 1.....	36 @37
Cotton-seed, Crude.....	62¢@29
Cotton-seed, Summer Yellow, prime.....	32 1/2@33
Cotton-seed Summer Yellow, off grades.....	31 1/2@2
Spine, Crude.....	6¢@2
Spine, Natural Spring.....	6¢@2
Spine, Bleached Spring.....	6¢@2
Spine, Bleached Winter.....	54 @65
Spine, Bleached Winter.....	50 @60
Whale, Crude, Natural Winter.....	44 @45
Whale, Bleached Winter.....	45 @46
Whale, Extra Bleached Win.....	48 @49
Menhaden, Crude, Sound.....	29 @37
Menhaden, Light Pressed.....	29 @30
Menhaden, Bleached Winter.....	32 @33
Menhaden, Extra Bleached.....	35 @35
Tallow, prime.....	50 @52
Cocoonut, Ceylon.....	73¢@8
Cod, Domestic.....	34 @36
Cod, Newfoundland.....	31 @40
Red Elaine.....	34 @35
Red Saponified.....	34 @35
Bank.....	2 gal. @2
Straits.....	6¢@2
Olive, Italian, bbls.....	56 @60
Neatsfoot, prime.....	48 @48
Palm prime, Lagos.....	5 gal. 51 @54

## Mineral Oils.

Black, 20 gravity, 25@30 cold test.....	5 gal. 11 @11 1/2
Black, 20 gravity, 15 cold test.....	12 @12 1/2
Black, summer.....	10 1/2 @11
Cylinder, light filtered.....	15 @17 1/2
Cylinder, dark filtered.....	13 @18
Paraffine, 90-907 gravity.....	14 @14 1/2
Paraffine, 903 gravity.....	13 @13 1/2
Paraffine, 883 gravity.....	11 1/2 @12
Paraffine, red, No. 1.....	14 @14 1/2
In small lots 1/2¢ advance.	

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